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THE

BRITISH NATURALIST:

AN

ILLUSTRATED MAGAZINE

OF

NATURAL HISTORY,

CONDUCTED BY

JOHN E. ROBSON, F.E.S., Hartlepool,

WITH THE ASSISTANCE IN VARIOUS DEPARTMENTS OF

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Editorial.

It having been decided to alter the name of the "Young Naturalist" to that of "BRITISH NATURALIST," opportunity has been taken to commence a New Series, and to considerably enlarge the staff of Assistant Editors. Messrs. C. A. Briggs, F.E.S., S. J. Capper, F.L.S., F.E.S., C. W. Dale, F.E.S., A. F. Griffith, M.A., and W. H. Tugwell, Ph.C., are well-known working Lepidopterists, whose names have frequently appeared in the pages of the "Young Naturalist." The diversity of opinion existing between some of these gentlemen on interesting points is the best guarantee that no bias will be shown towards any particular view, but that all questions affecting British Lepidoptera will have full and fair consideration.

Mr. G. A. Lewcock (Hon. Sec. of the City of London Entomological and Natural History Society) has for some time past managed the department of Coleoptera, to the great advantage of readers interested therein, and is now added to the list.

Mr. Linnæus Greening (of Warrington) has devoted much time to the study of the Reptilia and kindred forms, and will take the section relating to Vertebrata.

In view of the increasing popularity of Conchology in Britain, arrangements have been made with Mr. T. D. A. Cockerell to conduct a Conchological section. Of his special qualifications for this work it is unnecessary to speak. At present but a limited space will be devoted to the subject; but should the experiment prove as successful as is anticipated, the Magazine will be enlarged, so that the introduction of this new department will not operate to the disadvantage of any other section.

Whilst it is intended that the "British Naturalist" shall, as the title implies, give most attention to the British Fauna, it is not proposed to exclude altogether notice of what is being done elsewhere, and occasional papers will still appear on collecting, &c., in other parts of the world.

In conclusion, readers are requested to forward articles of interest, notes of field work, exchanges, &c., &c. Some very valuable papers are already in hand, and many others promised, and it is confidently anticipated the "BRITISH NATURALIST," for the quality of its contents, and general usefulness, will rank second to no Magazine of kindred character.

JOHN E. ROBSON.

TO CONCHOLOGISTS.

As announced above, I have undertaken to conduct a Conchological section in this Magazine. Although several journals insert articles on the Mollusca, and so excellent a periodical as the "Journal of Conchology" is devoted entirely to the subject, there seems to be need of a journal appearing at frequent intervals, somewhat on the lines of the American "Nautilus." If this experiment meets the approval and support of Conchologists, the space devoted to the subject will be extended as required. Articles, and especially short notes, will be welcomed for its pages. It will be my endeavour to preserve a balance between the various opinions which prevail amongst Conchologists, and the "splitters" and "lumpers" will find equal favour, so long as their writings are genuine contributions to science.

A special feature will be made of Bibliographical notices, calling attention to and discussing papers of interest.

Notices of exchange will be inserted free to subscribers. In order to make them brief, it is suggested the numbers in the "British Naturalist's" Catalogue be used to indicate duplicates and desiderata.

Shells and slugs will be named for subscribers, but we cannot undertake to return them. The locality of each specimen sent should be affixed to it, and the names and localities will be published in the

THE

BRITISH NATURALIST.

Insecta.

GOSSIPING NOTES ON BRITISH COLEOPTERA.

BY G. A. LEWCOCK.

ODACANTHA—DEMETRIAS.

ODACANTHA, Payk—constructed from two Greek words, meaning "tooth" and "spine." The only species occurring in Europe is *O. melanura*, Payk. It is found in marshy places, among reeds, &c. Canon Fowler ("Natural Localities of British Coleoptera") gives some excellent instructions for procuring this beetle :—" In the fen districts it is customary to cut the sedge and reeds in large quantities, and carry it up the rivers in sedge boats, as they are called ; if a collector will furnish himself with a sheet, and persuade the boatmen—which only requires a small fee—to shake the bundles over it as they unload them, he will reap a rich harvest—*Odacantha melanura* in abundance, *Dromius longiceps* and *sigma*, and *Aetophorous imperialis* being some of the best species : these, of course, may all be found in their respective localities, but this is a good way of obtaining them." It has been taken by Mr. Champion, at Dagenham, Essex, and I also have seen a specimen at the same place, but unfortunately did not succeed in capturing it. Occurs also "in stems of *Typha*, &c., almost in the water—rare. Taken by Mr. Brewer, at Earlswood Common" (G. C. Champion). Stephens ("Mandibulata," Vol. I., p. 14) says: "*O. melanura* principally inhabits the counties of Norfolk and Huntingdon. In the former county, I believe, it chiefly occurs in the vicinity of Norwich, on the banks of the Yare, and in the marshes at Horning, and near Fakenham. In the latter county it was found abundantly in the summer of 1825, on the borders of Whittlesea-mere, by Messrs. Chant and Bentley. My friend Mr. Donovan observes that it is found in profusion in Cromllyn bog, Glamorganshire, near Swansea, where Dr. Leach procured many specimens." I quote a portion from Curtis, as being, to my idea, quite as feasible a method of procuring the species as shaking dry reeds:—"This elegantly-formed and lively insect is an inhabitant of reedy fens. It may be found by shaking the reeds that have been cut down and tied in bundles for thatching; those nearest the water's edge, or even floating, being the dampest, are their most favourite situations, and there, in dull weather, they conceal themselves; they are also found amongst the fragments of reeds left after an overflow of marshes." It is recorded by Mr. Champion ("E. M. M.," Vol. 10, p. 39) as occurring at Ilford, Essex. Many new localities are given by Canon Fowler in "Coleoptera of British Islands," but the foregoing hints will probably put Coleopterists of the present day on the alert, and doubtless other localities will be discovered. The Rev. W. F. Johnson, who has taken a great deal of trouble to hunt up information on this subject, writes me that he has "some specimens labelled 'Brundall, Sept. 1884,' but I do not know where Brundall is, nor can I remember who sent me them. From its habits it would be very likely to occur in Ireland, especially in the south, but it is not recorded as yet. If the presence of *Typha latifolia* would bring the beetle, it should be here, for the reed is very abundant. I have, however, searched many times for pupæ of the moth *Nonagria typhæ*, and only got, besides the pupæ, some little staphs., *e.g.*, *Alianta incana*.

Aëtophorus, Schmid-Gœbel.—Derived from two Greek words, meaning "to bear an eagle," alluding to black mark on the elytra, which is supposed to resemble a double-headed eagle. The genus contains only one species, *A. imperialis*. A single specimen fell to my lot while searching at Rainham, Essex, among the reeds. Mr. W. H. Harwood sent me a specimen (in exchange) taken in marshes near Colchester. Also captured by Mr. Champion at Dagenham, and Ilford, Essex, and is recorded by that gentleman in *E. M. M.* Vol. 10, p. 39, as follows :—"*Aëtophorus imperialis* in quantity among the *debris* of fallen reeds, near Ilford, Essex, thanks to my friend Mr. J. G. Marsh, who introduced me to the locality."

DEMETRIAS, Bonelli.—Proper name, of a silver-smith of Ephesus. Why this name should be given to the genus it is not easy to see (W. E. Sharp). Two species occur in Britain, and neither are uncommon.

D. monostigma, Leach (Sharp's Catalogue), *D. unipunctatus*, Germ. (*monostigma*, Sam). [Fowler]. Common on sandy banks, by the Thames, near Kingston (Surrey). "At roots of grass, in moss, &c., in dry sandy places, and in marshes ; local and uncommon ; Deal, Kent," (G. C. Champion, *Kent and Surrey Coleoptera*). "Abundant at roots of the wiry grass on sandhills, Deal ; most plentiful in spring" (C. G. Hall). Taken at same locality by Mr. Bennett (Hastings) and Mr. West (Greenwich). "Said to have been taken by Mr. Gregson on the Wallasey sandhills, but certainly has not occurred there recently" (W. E. Sharp, Ledsham).

THE DIPTERA OF DORSETSHIRE.

BY C. W. DALE, F.E.S.

SUB-ORDER—APHANIPTERA.

FAMILY—PULICIDÆ.

There are numerous species of this family, peculiar to various animals and birds. Dugès describes four species—*P. irritans*, *canis*, *musculi*, and *vespertilionis ;* whilst Bouchè describes ten—*P. canis*, *irritans*, *gallinæ*, *felis*, *martis*, *sciurorum*, *erinacei*, *talpæ*, *musculi*, and *vespertilionis*. Walker describes fourteen, the additional ones being *P. melis*, *columbæ*, *hirundinis*, and *fringillæ*. The largest British species is *P. talpæ*. An American species—*P. gigas*, Kirby—is two lines long. In the West Indies and South America is an insect belonging to the family which is still more obnoxious; this is the Chigoe or Jigger, *Sarcopsylla penetrans*, which burrows deep into the flesh, causing most violent inflammation.

Linnæus placed these insects in his order APTERA; but they are generally considered to be an aberrant family of the DIPTERA. The female is more than double the size of the male, and usually lays eight to ten eggs. The larvæ are long, apod, vermiform maggots, composed of thirteen segments, and, although without legs, are extremely vigorous in their movements, twisting about in all directions. They may be found in carpets, blankets, birds' nests, &c., and were discovered by Mr. Boden, in 1881, feeding on the juices of *Œcophora pseudospretella* and *Endrosis fenestrella*. The larva, when full grown, seeks out some crack, or other safe place of refuge, and there, after remaining some time in a motionless state, spins itself a cocoon of the softest and most slender silk, the interior being of the purest white, but the exterior rougher, and soiled with dust. Within this cocoon it changes to a pupa, which at first is of a milk white, but gradually changes colour, and finally assumes that of the imago. It is a question how many species there are, and whether the same species does not infest more than one species of animal or bird: thus some consider all those attached to birds to constitute but a single species. However, the antennæ of different species exhibit considerable differences.

The following I have found in Dorsetshire:—

1. *Hystrichopsylla talpæ*, Curt. Of this large species I found a specimen in a field mouse's nest, at Glanville's Wooton, on Sept. 4th, 1889. It was first described and figured by Curtis in his "British Entomology," in 1826, but under the mistaken impression that it was attached to the mole. It has also been figured and described by Ritsener in the "Tijdshrift Ent.," in 1868, under the name of *Obtusiceps*. If the name given by Curtis be superseded because the species is not found on the mole, so must various specific names of Lepidoptera be superseded, because the larvæ do not feed on the plants after which they are named. In 1873 Mr. Champion exhibited at the Entomological Society, specimens of a large species of flea, probably of this species, found by Mr. F. Walker in a mouse's nest in the Isle of Sheppey.

2. *Pulex irritans*, Linn. COMMON FLEA. Figured by Walker. Bouchè separated the various species according to the length of the joints of the tarsi.

3. *P. canis*, Duges. This has shorter legs than *Irritans*, the tibiæ are thicker, and the femora almost bare. Curtis has figured dissections in his "British Entomology."

4. *P. felis*, Bouchè. Common on cats.

5. *P. erinacei*, Boucè. Common on hedgehogs.

6. *P. sciurorum*, Bouchè. Common on squirrels.

7. *P. martis*, Bouchè. Common on weasels, ferrets, and stoats.

8. *P. goniocephalus*, Tasch. On rabbits, especially about the ears. This is probably the same species as that found on the hare, which Leach called *Leporis*.

9. *P. gliris*, N.S. On dormice. This is very different from that found on ordinary mice, and more nearly resembles *Martis* and *Felis*. Perhaps, after all, these four last, and *Felis* as well, are but one species.

10. *P. gallinæ*, Bouchè. Common on hens, especially in their nests. I have also found it on sparrows, starlings, jackdaws, blackbirds, thrushes, robins, creepers, wrens, long-tailed tits, jays, yellowhammers, and moor-hens. It also attacks the domestic fowl in Ceylon, attaching itself by its rostrum in considerable numbers around the eyes and on the neck of the bird. It can easily be distinguished from all other British fleas by the length of the antennæ, and also by being of a much blacker colour. *P. fringilla*, Walk., and *Sarcopsyllus gallinaceous*, Westwood, are probably synonyms of this species.

11. *P. hirundinis*, Curt. On swallows and martins. This differs from *Gallinæ* in being testaceous instead of *piceus fuscus*, in being rather more elongated, and in having shorter antennæ. Curtis has figured the head, tarsi, antennæ, and other dissected parts, in his "British Entomology."

12. *P. columbæ*, Walk. On wood-pigeons and other pigeons. This likewise differs from *Gallinæ* in being testaceous; but it is far less elongated than either it or *Hirundinis*.

13. *Ceratophyllus elongatus*, Curt. Infests the Noctule bat. It was beautifully figured and described by Curtis in his "British Entomology," but re-described and named *Typhlopsylla octactenus* by Kolenati.

14. *C. vespertilionis*, Duges. Common on the long-eared bat. Re-named *Typhlopsylla hexactenus* by Kolenati many years after.

15. *C. musculi*, Duges. Common on mice.

16. *C. gracilis*, Tash. Common on moles. The fleas of this genus differ as much from the common flea as does a greyhound from a sheep dog.

(To be continued.)

MIANIA STRIGILIS AND FASCIUNCULA.

By JOHN E. ROBSON, F.E.S.

Several correspondents have written me respecting a statement made at a recent meeting of the City of London Entomological Society, and reported in the December part of the Young Naturalist that one of these was but a variety of the other. The assertion was made by my friend Mr. J. W. Tutt, who has bestowed much attention in the variation of the markings in the wings of our British Noctuæ. It is reported in his own magazine in the following words "*M. fasciuncula* was a var. of *strigilis* without doubt. The Rev. F. W. Johnson had sent Mr. Tutt specimens perfectly intermediate, and equally well named as either species." It seems very hard to believe that so positive an assertion as this, could be made on such very slight evidence. Have we not, all of us, abnormal specimens in our collections that might equally well be given more than one name. I have bred a pug that has had four names given to it by as many different Entomologists, and my friend Mr. Gardner bred another of them, which was exhibited at a meeting of the Entomological Society, under yet a different name. But surely the want of unanimity amongst Entomologists concerning an abnormal form is no evidence that these five pugs are all one species. *Tephrosia biundularia*, and *crepuscularia* are insects concerning which there has been much discussion. Every cabinet contains specimens that might with equal propriety be called by either name, if nothing but the superficial appearance were considered. But it is well known that these two species fly at different periods of the year, and if no other evidence could be adduced, that is surely enough to establish their distinctness. But with the species now under consideration a great deal more can be said. Both the ordinary and extreme forms of *biundularia* are very like those of *crepuscularia*. Accepting Mr. Tutt's statement, that one collector (and I assume only one) has sent him forms that might be called by either name, *strigilis* and *fasciuncula*, widely distributed and common as they are, never (with this one exception) resemble each other at all. Irrespective of colour, in which they vary greatly, they differ both in size and shape, *fasciuncula* being always smaller, and the forewings being more truncate, it has a decidedly stumpy look. They also assume the perfect state at different periods, and when on the wing, their flight is so different that could we see them together it were easy to distinguish them. *Fasciuncula* is the first to appear, being, in a forward season, on the wing at the end of May. It flies before dusk, with a rather quick erratic movement, much like that of the male of *Hepialus lupulinus*, though scarcely so swift. Later in the evening it may be found abundantly on the flowers *Heracleum sphondylium* and other *Umbelliferæ*. *Strigilis* is quite a month later in appearing, and though Newman says it flies in the day time, I never saw it on the wing till it was quite dusk. It flies with a steadier flight than *fasciuncula*, the difference being perhaps difficult to describe in words, but very easy to observe. Both come freely to sugar, but *fasciuncnla* is much less disturbed by the glare of the collector's lantern, or by him picking off the insects he desires. I cannot remember that I ever saw *strigilis* at *Heracleum* or kindred flowers. I am of opinion that these differences of size, shape, time of appearance, and habit, are abundantly sufficient to establish their distinctness by the imagines alone.

I have bred both species, but cannot say I know the larva of either; but Newman describes that of *strigilis* ("British Moths," 308); and Buckler that of *fasciuncula* ("E.M.M.," XIII., 62). The differences between the two larvæ may be summarized as follows:—*Strigilis*, greyish green, with five *paler* stripes, studded with *minute* warts, each of which emits a *short*, *stiff*, black hair. *Fasciuncula* is of a pale flesh tint, inclining to greyish ochreons, with *darker* stripes; on the sides of the second, third, and fourth segments, are *rather large*, brown, shining spots; a *fine*, *soft* hair proceeds from each. Finally, Newman describes the chrysalis of *strigilis* as *rather slender* and *reddish;* Buckler that of *fasciuncula* as being *stout*, and of uniform bulk to a little below the wing covers; colour, *mahogany brown*.

To sum up, then, the imagines differ in size, shape, colour, and habit; the larvæ differ in colour, in the stripes being darker or lighter than the ground, in the size and number of the spots, and in the hairs upon them; the chrysalides differ in shape and colour. If these distinctions are not enough, I do not know what would be.

I am quite aware that Guenée said *fasciuncula* was a var. of *strigilis*, but I do not know on what evidence he founded his opinion. I know, however, that his friend and co-worker, Henry Doubleday, did not agree with him, and that French collectors consider them distinct. Every French catalogue I possess, dealers' or otherwise, gives them as distinct species, without even a mark of doubt or uncertainty.

Notes.

SPINX CONVOLVULI AT SUNDERLAND.—I was looking over the collection of a friend the other day, and saw two very good specimens of *Spinx convolvuli*, which, he informed me, were taken two years ago flying about a large electric light, used on the new pier works here.—L. S. BRADY, Sunderland.

Larvæ.

PIERIS BRASSICÆ.—On July 23rd, 1888, I took 36 larvæ of this ubiquitous insect at rest upon one cabbage leaf, and which I thought was an unusually large number to be at rest on one leaf. On August 8th I discovered 35 of them were ichneumoned, or "egg spitted" as a friend terms it, and covered with the well-known yellow cocoons of *Apanteles glomeratus*. The largest number of these cocoons from one larva was 135, and the smallest 20. Taking the average to be 75, and multiplying by the total number stung, we get the total of 2625 cocoons, which is certainly an enormously large quantity, and one cannot wonder at *P. brassicæ* becoming rarer if its parasite is so abundant. —A. E. HALL, Norbury, Sheffield, December, 1890.

VANESSA IO.—The larva of this species, like many others, ejects a disagreeable green fluid from its mouth when disturbed. My friend Dr. J. A. Chapman, of Hereford, tells me that this liquid is most nutritious to the larva, and if one desires to breed fine healthy specimens, the larvæ must not be excited to part with this liquid, but if they are, every chance must be given them to consume the same again, which they generally will do if left alone. I have only noticed this species in order to bring forward the valuable information of Dr. Chapman's—Id.

PYGÆRA BUCEPHALA FEEDING ON COMMON LAUREL.—Several records have been made during the past year in *The Entomologist* of *Diloba cæruleocephala* feeding on the common laurel *Cerasus laurocerasus*; I can add another to the list, viz., *Pygæra bucephala*; in July last I observed a colony of these larvæ feeding on the above named shrub, which forms a fence to the station master's garden at Bickleigh, Devon.—G. C. BIGNELL, Stonehouse, Plymouth, 13th Dec., 1890.

LARVÆ OF A. CAJA HIBERNATING.—Desiring to send some hibernating larvæ of *A. caja* to an American friend, I have fed a small brood during the autumn. I soon saw they were progressing at very different rates, and concluded some of them would spin and emerge this year, whilst the others would hibernate as usual. Perhaps had I attempted to force them a little some would have completed their changes. But they were kept in a cold room, and none have spun up. Some of them however, appear quite full fed, whilst others are in various stages of progress, down to that state in which they are generally found in early spring. I had an idea that hibernating larvæ would all pass the winter in exactly the same stage, but it has thus been dispelled.—JOHN E. ROBSON, Harlepool.

CYMATOPHORA FLUCTUOSA.—The larvæ feeds between united birch leaves during September, when it is full fed. It is a difficult caterpillar to dislodge, and takes a prodigious amount of beating out. It is getting very scarce here now, and being so generally local, and where it does occur hard to procure, I consider it one of the difficult species to fill up a series. The larvæ pupates between birch leaves in a state of nature, and either between the same, or among the rubbish at the bottom of the cage, in captivity.—A. E. HALL, Norbury, Sheffield.

TRYPHÆNA ORBONA.—I was much struck last May with some black forms of the larvæ of *Tryphæna orbona* feeding on Foxglove at Delamere. They contrasted very markedly with some larvæ of the same species feeding on nettle and mixed herbage on the same ground. I collected some of them, thinking they would probably produce good varieties, but I was quite disappointed, for the imagines were of the most ordinary forms.—JOS. COLLINS, Warrington.

TETHIA RETUSA.—Judging from the desiderata lists one has sent this species is much wanted. Possibly the following hints may enable many to supply themselves with it:—

This is a larva that the universal beating-stick rarely or never brings to net. It is a case of use your eyes. The best time to search for them is 1st to 2nd week in June (by which period they should be nearly full fed). Carefully inspect the top leaves on the shoots of several kinds of willow and sallow; the larvæ very neatly draw together the top leaves, and lie ensconced along the shoot. They do not twist or contort the foliage like many species, in fact, save that the top looks perhaps a little thicker, it may readily be passed over. One is often surprised to find so large a larva with so slight a sign of tenant. When found it is best not to disturb them from their retreat; very slightly open just the top of the bud, when, if there, you will see the *black head* of the larva. Of a pale, translucent, apple green, with white stripes, *Epunda viminalis* larvæ are similar, only they have an opaque *white head*, with *blackish jaws*, and the green is less bright, having a yellow tone. I have often found that they affect trimmed hedges, bye lanes near woods, and around country cottage gardens, where the young shoots of sallow, tops the slower-growing hawthorn, &c. The larva spins up in the leaves, so that any convenient breeding cage may be used, without earth. When once you know how to detect them, you will be surprised how often you have passed them by. Twisted and curled-up leaves of sallow should be kept by themselves. From these you often breed the first brood of *Peronia hastiana* (but these are rarely as varied as the autumn brood), as well as several other Tortrices; and look out for the cannibal *Brumata*.—W. H. Tugwell, Greenwich.

Dragon-flies.

Preservation of Colours.—I was rather surprised in reading at page 89 of British Dragonflies, reviewed in the last number the Y. N., to see "The colours of some dragonflies are very difficult to preserve." I do not find the slightest difficulty to preserve the colours, nothing can be accomplished without some trouble and forethought, and if the author had only tried, I feel certain he would have got over the supposed obstacle, as he does not appear able to instruct his readers in the way how to do it. I will try to assist him. First do not carry a Cyanide bottle when collecting, but bring the specimens home alive, and let them remain in the box for at least 24 hours, by that time the contents of the stomach will have passed off, then you can use your

Cyanide bottle. Directly the fly is dead it should be operated upon by cleaning out its stomach and abdomen, which can be done in the following manner :—Obtain a long, fine darning-needle, thread it with a short piece of thread, tie the ends together and in the loop thus formed, place some soft darning-cotton the same colour as the predominent colour of the body, blue, yellow, or whatever it might be, and according to the thickness of the body have two or more strands, the needle should then be inserted between the forelegs and passed through the entire length of the insect, pulling the cotton through unit has cleaned out the contents of the thorax and abdomen, cut off the cotton at both ends, if the precaution is taken to damp the last portion pulled through with *Carbolic Acid* no insect will attack it in the cabinet, coloured floss silk may be used instead of cotton with advantage, the insect is now ready for setting; another great advantage in preparing them this way, the abdomen does not drop off; the smaller species can be treated after the same fashion, but it is not necessary to use the thread loop, simply thread the fine needle with the silk and pass through as before.—G. C. Bignell, Stonehouse, Plymouth.

Mr. J. Mackey in the Young Naturalist, Vol. VII., p. 168, speaks highly of the method recommended by Mr. Bignell in a former communication and repeated above.—J.E.R.

Reports of Societies.

ENTOMOLOGICAL SOCIETY OF LONDON.

December 3rd, 1890.—The Right Hon. Lord Walsingham, M.A., F,R.S., President, in the chair.

Mr. John Gardner, of 6, Friar Terrace, Hartlepool ; and Mr. Samuel James Capper, F.L.S., of Huyton Park, near Liverpool, were elected Fellows of the Society.

Dr. D. Sharp exhibited specimens of *Papilio polites*, *P. erithonius*, and *Euplæa asela*, received from Mr. J. J. Lister, who had caught them on board ship when near Colombo, in November, 1888. Dr. Sharp read a letter from Mr. Lister, in which it was stated that from the ship hundreds of these butterflies were seen flying out to sea against a slight breeze. Many of them, apparently exhausted by a long flight, alighted on the deck of the ship, and large numbers perished in the sea.

Lord Walsingham exhibited a coloured drawing of a variety of *Acherontia atropos*, which had been sent to him by Mons. Henri de la Cuisine, of Dijon. He also exhibited specimens of an entomogenous fungus, apparently belonging to the genus *Torrubia*, growing on pupæ, received from Sir Charles Forbes, and which had been collected in Mexico by Mr. H. B. James. Mr. M'Lachlan expressed an opinion, in which Mr. C. O. Waterhouse and Mr. G. C. Champion concurred, that the pupæ were those of a species of *Cicada*. Mr. F. D. Godman said that at the meeting of the Society on the 3rd October, 1888, he had exhibited a larva of a *Cicada* with a similar fungoid growth. The specimen was subsequently produced, and the fungus roved to be identical with that on the pupæ shown by Lord Walsingham.

Mr. R. Adkin exhibited male specimens of *Spilosoma mendica*, bred from ova obtained from a female of the Irish form which had been impregnated by a male of the English form. These specimens were of a dusky white colour, and were intermediate between the English and Irish forms.

Mr. F. Merrifield showed samples of a material known as "cork-carpet," and explained its advantages as a lining for cabinets and store boxes. Dr. Sharp fully endorsed the opinion expressed by Mr. Merrifield.

Mr. R. W. Lloyd exhibited specimens of *Anisotoma Triepkei*, Schmidt, and *Megacronus inclinans*, Er., collected last August at Loch Alvie by Aviemore.

Mr. Merrifield read a paper entitled, "On the conspicuous changes in the markings and colouring of Lepidoptera caused by subjecting the pupæ to different temperature conditions," in which it was stated that the results of many experiments made on *Selenia illustraria* and *Eunomos autumnaria* tended to prove that both the markings and colouring of the moth were materially affected by the temperature to which the pupa was exposed; the markings by long continued exposure before the last active changes; the colouring, chiefly by exposure during these last changes, but before the colouring of the perfect insect began to be visible, a moderately low temperature during this period causing darkness, a high one producing the opposite effect, and two or three days at the right time appearing in some cases sufficient. Dryness or moisture applied during the whole pupal period had little or no effect on either markings or colouring. Applying the facts thus ascertained, Mr. Merrifield said he had obtained from summer pupæ of *illustraria* some moths with summer colouring and spring markings, some with spring markings and spring colouring, and some with summer markings, but an approach to spring colouring. These specimens, with enlarged and coloured photographs of them, were exhibited.

Mr. C. Fenn, who said he did not agree with Mr. Merrifield's conclusions, exhibited a very long and varied series of specimens of *Eunomos autumnaria*, all of which, he stated, had been bred at the same temperature. He expressed an opinion that the presence or absence of moisture, rather than differences of temperature, was one of the principal causes of variation. The discussion was continued by Lord Walsingham, Colonel Swinhoe, Mr. Waterhouse, Mr. Jenner Weir, Captain Elwes, Mr. M'Lachlan, Mr. Porritt, Dr. Mason, Mr. Barrett, and others.

Mr. G. T. Baker read a paper entitled "Notes on the Lepidoptera collected in Madeira by the late T. Vernon Wollaston." The paper was illustrated by a number of figures drawn and coloured some years ago by Prof. Westwood.

Mr. Hamilton H. Druce exhibited several very beautiful species of butterflies, belonging to the genus *Hypochrysops* from the Solomon Islands and Australia, and read a paper on the subject, entitled "A Monograph of the Lycænoid genus *Hypochrysops*, with descriptions of new species."

Mr. J. C. Gahan read "Notes on some species of *Diabrotica*."—H. Goss and W. W. Fowler, *Hon. Secs.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY ASSOCIATION.

November 27th, 1890.—W. H. Tugwell, Esq., Vice-President, in the chair. Mr. South exhibited examples of *Melanippe fluctuata*, from many localities and called attention to the var. *costovata*, of Haworth, also to an unusually large specimen from Scotland, he also referred to Milliére's figure of the variety known as *Neapolisata*, as to which Mr. South expressed an opinion that he hada doubt as to its occurring in England. Mr. Hodges, *Leucania vitellina*, taken September 26th, 1890; also specimens of *Caradrina ambigua*, Isle of Wight, August, 1888, and one from Guernsey, September, 1890. Mr. R. Adkin, a series of *Spilosoma menthastri*, bred from ova received from the North of Ireland, the whole of the moths having a distinct brownish tinge of colour which was common to both sexes, the specimens also varied much in the arrangement of the spots, he remarked that he understood this form was the prevalent one in the district. Mr. Tugwell said that Mr. Adkin's specimens were very similar to those from the neighbourhood of Perth. Mr. Short, series of the two forms of *Lobophora viretata*, bred from ova received from the Birmingham district and stated that he occasionally took the species in the North of London. Some discussion took place as to the difference in colour and size of the respective broods. Mr. Short also exhibited three examples of *Spilosoma fuliginosa*, from Aberdeen, much larger and paler than those usually received from the north. Mr. Adye, forms of *Anchocelis lunosa*, from Christchurch, Hants. Mr. Tugwell, insects from New Caledonia; also long series of *Triphæna orbona*, from English and Scotch localities, and extreme forms from Shetland, the series showed considerable variation and *subsequa*, which species the exhibitor remarked was more stable in colour and the variation was less marked than in *orbona*. Mr. Billups, foreign Coleoptera, also numerous species of Diptera taken by him during the past season, among which were *Tetanocera ferruginea*, Fen. *T. elata*, Fen., *T. punctulata*, Scop., *Acidia cognata*, W., *A. heraclei*, L., *Palloptera arcuata*, Fen., *Limnia marginata*, F., *Platystoma seminationis*, Fen,, &c., &c.

December 11th, 1890.—W. H. Tugwell, Esq., in the chair. Mr. R. Adkin, exhibited *Peronia hastiana*, bred from larvæ received from the Isle of Man; *Hepialus sylvanus*, L. taken in Kent and called attention to a peculiar habit of the species of hanging from the herbage when in copula. Mr. R. South, *Lycæna agestis*, vars. *allous*, *salmacis*, and *artaxerxes*, and made some observations thereon. Mr. Tugwell, long series of *Eupithecia satyrata*, English and Scotch, also the var. *callunaria*, also several specimens of *Eupithecia* from Paisley which Mr. Tugwell said he could not think were *E. satyrata* Mr. C. G. Barrett expressed an opinion that they were *E. trisignaria*. Mr. Fenn said he had never heard of this species so far north as Scotland. There was considerable discussion relative to this exhibit. Mr. Short, *Epunda lichenea*, from Portland. Mr. Farrant a small form of *Hypsipetes elutata*, and a Deltoid which he stated was taken in Somerset. Mr. Tugwell expressed an opinion that this species was new to the British list, Mr. Sonth remarked that he had seen the species from Japan and Mr. Fenn said he had seen something very like it from Jamacia. Mr. T. R. Billups, *Masicera sylvatica* bred by Mr. Fenn from the larva of *Saturnia pavonia*. Mr. Winkley had also bred the same species from *Pieris brassicæ*, *Phorocera concinata*, by Mr. Frohawk from *Vanessa urticæ*, *Trixia variegator*, from *Cheimatobia boreata*, by Mr. South. Mr. Billups also called attention to three specimens of the rare *Oxycera terminata*, one of which he had bred from a pupa found in his own garden, Dulwich, 1889, the other two being captured in the same locality in August last, he also exhibited several species of Hymenoptera parasitic on the ova of Lepidoptera and Diptera, Mr. Hodges, a nest of a species of wasp.—H. W. Barker, *Hon. Sec.*

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

Thursday, 4*th December*, 1890.—Mr. J. A. Clark, F.E.S., President, in the chair The gentlemen nominated as officers at the last Meeting were formally elected. Mr. Battley then read the Secretary's report, for 1890, from which it appeared that there had been a steady increase in the attendances, the papers being especially interesting, and the exhibits both varied and numerous. The President then delivered his annual address. Mr. Heasler drew the attention of Coleopterists to the Society's collection of Coleoptera, stating that the number of species contained therein was comparatively small, he asked those who studied this order of insects, to endeavour to make the collection of more practical value. The following were the exhibits :—*Triphæna orbona* from various localities, also specimen of a locust from near Gibraltar, by Dr. Buckell. *Cerastis vaccinii*, and var. *Polita*, *C. spadicea*, *Miselia oxyacanthæ*, and var. *capucina*, and other autumnal species taken this season by Mr. Battley. Mr. Hodges (on behalf of Mr. Mutch) exhibited a specimen of *Gonepteryx cleopatra*, stated to have been taken in August, 1882 at Fotheringham, Forfarshire. Mr. Tutt made some remarks on the claims of this species being distinct from *G. rhamni*, and the probable cause of introduction. Mr. Milton, *Melitea artemis*, *Noctua festiva*, and *Agrotis corticea*. Mr. Burrows, *Nyssia hispidaria* from Coventry, also *Phratora cavifrons* and other Coleoptera. Mr. Simes, *Noctua festiva* from Scotland. Mr. Heasler, *Dermestes vulpinus*, *D. undulatus*, &c. Mr. Elliman, *Dromius* 4-*maculatus*, *Mycetophagus* 4-*maculatus*, *Endomychus coccineus*, *Rhinossimus ruficollis*, *R. planirostris*, etc., all taken under the bark of beech trees. Mr. Clark announced that he had recently bred eleven specimens of *Triphæna subsequa* from the ova, also a variety of *Aplecta occulta*.

December 18*th*, 1890.—The President in the chair. Mr. O. C. Goldthwaite exhibited *Coremia propugnata*, bred from females taken at Rochester and Chingford, showing a wide range of variation in the dark band ; also, for comparison, a bred series of *Melanippe fluctuata*. The same gentleman likewise remarked on Mr. Merrifield's papers on Variation, in connection with the articles in the *Entomologist's*

Record. Mr. Tutt, replying, stated his opinion that heat only influenced insects in larval state, and that the results of Mr. Merryfield's experiments were mainly owing to in-breeding. Mr. Machin exhibited *D. furcula,* also *L. insignitella, I. canariella, Œ. stipella,* and other Tineina. Mr. Hodges, a var. sf *S, irrorella* from Isle of Wight, and two fine vars. of *A. grossulariata,* the inner half of forewings being suffused with yellow. Mr, Quail, cocoon of *S. carpini* with two exits, cocoon of *Simyra venosa,* &c· Mr. Battley, cocoons of *Acronycta aceris.* Mr. Boden, *Phoxopteryx upupana,* and *Mixodia ratzburghiana.* Mr. Clark announced that he had seen a specimen of the Peregrine Falcon which had recently been shot at Gravesend.

Coleoptera :—Mr. J. A. Clark exhibited a cabinet drawer of various species. Messrs. Cripps, Elliman, Heasler, Lewcock, Milton, and Newbery showed collections of the genus *Donacia,* which comprised seventeen species of that group, the two unrepresented being *obscura* and *impressa.* Mr. Lewcock read a paper on the subject, and gave an account of the nomenclature, the life-history, melanism, and the methods of collecting the species, with lists of localities, &c. He referred to the misapprehension respecting the identfication of *dentata* and *sparganii,* and the vague specific distinctions between *sericea* and *discolor (comari),* showing that the descriptions laid down in both Cox's Handbook of Coleoptera and Fowler's Coleoptera of the British Isles failed in their purpose of identification. He likewise produced over 100 specimens of the insects in support of his allegations. In some of the specimens the antennæ were long, others of medium length, and the remainder very short. One very dark specimen (from Esher) had scarcely any tubercle at sides of thorax, very short legs, and long antennæ. He commented on Mr. Newbery's exhibit which contained typical specimens of *sericea* and *discolor* from Scotland, Middlesex, and Surrey, with intermediate forms of the insects. In the discussion which ensued, Mr. Tutt pointed out that the dark forms exhibited were all uniformly small. Mr. Newbery agreed entirely with Mr. Lewcock's observations on *sericea* and *discolor,* and said that the misapprehension concerning the identity of *dentata* and *sparganii* was to be attributed to the tabulation in Cox's Handbook. Messrs. Cripps, Heasler, Milton, &c., also took part in the discussion.—G. A. Lewcock and A. W. Battley, *Hon. Secs.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.

The monthly meeting was held on Monday, December 8th, the President, S. J. Capper, F.L.S., F.E.S., in the chair. Mr. B. H. Crabtree, of Manchester was elected a member. Mr. R. Newstead, F.E.S., read a paper on "British Wasps, their parasites and scavengers," in which he gave the life history of wasps, from the commencement of the nest by the single queen, to the complete formation of the colony, and enumerated 22 species of insects which he had found inhabiting the nests of wasps. The paper was fully illustrated with specimens and diagrams. The President exhibited *Acidalia immerata* from Lewes. Mr. Gregson, cases of *Articulatæ* shewing manipulation before being presentable at public and private museums, Mr Sydney Webb, his two specimens of *Plusia moneta.* Mr. Beschorner, foreign *Papilios.* Mr. Stott, a variable series of *Charæas graminis.* Mr. P. Schill, *Parnassius, Apollo and P. phœbus,* with specimens of *Papilio machaon,* shewing the marked difference between English and foreign specimens.—F. N. Pierce, *Hon. Sec.*

Mollusca.

NOTES ON HELIX NEMORALIS AND H. HORTENSIS.

By The Rev. J. W. HORSLEY, M.A.

1. I have a strong opinion that *nemoralis* and *hortensis* are quite distinct species, though related. Certain things would incline me to believe that the former is an improvement on the latter, rather than the latter a degraded form of the former. *Hortensis* seems to me to become occasionally like to *nemoralis*, but I do not notice the reverse. I have never seen the two species coupling, and should call var. *hybrida* rather var. *fuscolabiata* of *hortensis*. I rarely find the two species in the same hedge, or even district, though in a few places I have found them plentiful and inextricably mixed. Round Dover, for example, *nemoralis* is very plentiful and very varying, but I cannot find a single *hortensis* nearer than close to Folkestone, where, in one or two hedges, the two are mixed. So here not a *nemoralis* is found on the tertiary soils, though *hortensis* (and notably the vars. *lilacina*, *albida*, and *lutea)* abounds; but directly you touch the chalk, even where it is not actually at the surface, *nemoralis* appears. It is curious that in Plumstead Marshes, which are purely alluvial, both species are found plentifully, but never mixed, although only a couple of fields may separate them.

2. The nomenclature annoys me, especially when I have to interpret it to beginners and those ignorant of what passes for Latin amongst Conchologists. If you translate *hortensis* for their benefit, they are perplexed as to why *aspersa* is not so named. I have seen *hortensis* in a garden certainly, but not often. When is *nemoralis* a woodland shell? I have nowhere found it more plentiful than on sand dunes by the sea, and should never search a wood when I had a hedge to investigate for this shell. Then again, as the shells are so cognate, and their varieties also, why should not the bandless yellow varieties of both be *lutea?* What wiseacre named the yellow *nemoralis*, *libellula?* What resemblance to a dragon-fly did he discern? Again, why should the transparently-banded *nemoralis* be *hyalozonata*, and the similar variety of *hortensis* be *arenicola?* Why not both *hyalozonata?* And why *arenicola?* I have never found it on sand hills, nor indeed any *hortensis* at all, though, as I have said,

nemoralis abounds on sand hills—*e.g.*, at Deal, Hunstanton, S. Wales, and near Liverpool. Again, who thinks *incarnata* means red in Latin? or that *rubella* is much better? Why not *rubra* for the red varieties of both species?

3. Might it not be specified at what measurement the var. *minor* or *major* begins to exist? I have a full-grown *nemoralis* from Plumstead that will nearly get into the mouth of another from the Continent.

4. Why is the transparent-banded var. of *hortensis* so common, and that of *nemoralis* so rare? I have only taken a single specimen of the latter; but of the former, fifty specimens out of one hedge. Of course one of the differences between the two species is the infinitely greater pigment-producing power of *nemoralis*; but as the transparent banded var. exists in both, I do not see why it should be so very rare in one case.

5. Why is *luteolabiata* of *nemoralis* not recognized commonly? I have some specimens (all taken by me in one spot*—not found elsewhere it is true) in which there is a very thick lip of a decided chrome yellow colour. I never saw anything like it in *hortensis*.

6. Despite the greater pigment power of *nemoralis*, the variety with the five bands coalesced into one broad band is decidedly more common in *hortensis* than in *nemoralis*: this is curious.

7. When not all the bands exist, is it nearly always the upper bands that are wanting?

8. The third band is always the most peristent, and the omission of the third band only is very rare. I have taken perhaps sixteen *nemoralis*, and two or three *hortensis* of this sort. I have 00040 also, but never saw 10000, or 02000, or 00005.

9. I do not find 00345 at all rare, as Mr. Cockerell seemed to think in one of his communications to "Science Gossip." I mean as to *nemoralis*.

10. There are nine conceivable variations in which four bands exist, but coalesce into two—*e.g.*, 0(23)(45); but I have not seen one of them. So of the group "two bands in one" there are four possible but I have none.

11. *Nemoralis*, from its greater vigour, varies much more than *hortensis*, and requires, in my Collection, more than double the number of trays.

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* This was at Deal; I have seen the specimens in Mr. Horsley's Collection.—T.D.A.C.

12. Why—when *albida* and *lilacina* are well-marked varieties in *hortensis*, and common in some parts—are the corresponding varieties of *nemoralis* absent?

13. Why does *albida*, looking the purest white when the animal is alive, appear often only a faint yellow when cleaned out?

14. *Hortensis piscolabiata* is much more common than *Nemoralis albolabiata*.

15. Barred and blurred specimens, fairly common in *nemoralis*, are to me unknown in *hortensis*.

SUBFOSSIL SHELLS.—The following is a list of subfossil shells found in Bishop's Dyke near Sherburn, in Yorkshire, Sept. 9th, 1887:—

Planorbis contortus, *albus*, *complanatus*, *spirorbis*, *corneus*, *vortex*, *carinatus*, *Limnæa stagnalis*, *palustris*, *peregra*, and vars. *labiosa* and *oblonga*, *Anodonta anatina* var. *complanata*, *cygnea* (small), *Bythinia tentacula* and var. *excavata* and *producta*, *Valvata piscinalis* and var. *subcylindrica*, *Pisidium amnicum*, *Sphærium corneum*, *Succinea elegans*, *putris*, *Valvata cristata*.

The Dyke which was once navigable from Cawood to Sherburn had not been cleared out for about a century. On the above date, a number of men were digging out the mud and the shells were at the bottom.—GEO. ROBERTS, Wakefield.

BIBLIOGRAPHY.

The Journal of Conchology, Vol. VI, No. 8, sec. 11, 1890. The present number of this useful journal contains several papers of interest:—

P. 260. *J. T. Marshall.* New British Marine Shells. Two species of *Eulima* are introduced as British, *E. ephamilla* Watson, and *E. latipes* Watson. The former was originally found off Pernambuco, Mr. Marshall records it from off Aberdeen, The Minch, Sound of Sleat, Arran, Hebrides, and Milford Haven. The occurrence of a species thus common to S. America and Britain is interesting, as a resemblance between the Crustacea of these two regions was long ago observed. *E. latipes* is a species found in Torres Straits, and its occurrence at Land's End and the Scilly Is. is most extraordinary, if the English shell is really *latipes*—which is doubted by Mr. E. A. Smith and the Rev. Boog Watson. Mr. Marshall had previously named it in MS. *E. distorta* var. *tumidosa*, so the best way will be to call the shell *E. latipes* var. *tumidosa* (Marshall) until its true position is decisively settled.

P. 265. L. E. Adams. A note on the greenish variety of *Zonites glaber*, which he found near Penistone. The name *viridula* is proposed for it, but the same variety was several years ago named *viridans* by the present writer. (Science Gossip, Oct. 1885, p. 226).

P. 267. R. F. Scharff. *Arion minimus*, Simroth, a British slug. A very interesting paper, in which *Arion minimus* is recorded from Yorkshire and near Dublin. Mr. Roebuck follows with a note giving 18 counties and vice-counties from which he has seen it, including Pembroke and several Scotch counties. The distribution of the species seems to be northern and western in the British Isles. We do not doubt that *A. minimus* must be regarded as a valid species; but it appears to be identical with the earlier-described *A. intermedius*, Norm., and must, therefore, be known by this latter name. It is the *Arion flavus* of Morquin-Tondon, 1855, and of Clessin, 1884, according to Pollonera; but it does not appear to be the *Limax flavus* of Müller, 1774. In 1885 the present writer found it in Staffordshire, and gave a description of it as *A. flavus* in "Science Gossip," 1885, p. 224. *A. intermedius* is allied to *A. hortensis*, but it may be recognized by its yellowish-grey colour, with the sole, and especially the end of the body, becoming yellow. The bands are faint and ill-defined. The slime is yellow. The head and tentacles are dark grey.

p. 270. A. J. Jenkins. *Physa acuta* in Scotland, found by Mr. W. D. Rae at Aberdeen in warm water from a mill, of course introduced. Mr. Jenkins kindly permitted me to examine some of these specimens; they are genuine *acuta*.

p. 271. *Proceedings of the Conchological Society*. In these proceedings, and elsewhere in reports of Societies, varieties of Mollusca not hitherto recognised in Britain are occasionally mentioned from British localities. In such cases no descriptions are given, and unless one is on the look out for them, the records easily evade observation. Thus on p. 272 we have mention of *Sphærium corneum* var. *complanata* from Hollinwood. On p. 273 *Hydrobia jenkinsi* var. *tumida* is mentioned from Tilbury Marshes, this is a tumid variety which we have seen in Mr. Jenkins' collection, but it has not been described. On p. 275 *Clausilia rugosa* var. *erasa* is reported from North-West Yorkshire, this variety was described by Moquin-Tandon, it is more slender than the type, and almost glossy. On p. 276 Mr. Roebuck records *Arion subfuscus* var. *brunnea* from Skiddaw Forest. This, we presume, is *brunneus*, Lehm., in which the bands on the body are confused, and the mantle becomes mottled with brown.

p. 277. L. E. Adams. A few notes on the Eastern Counties. Notes on a walking tour from Cambridge through Colchester, Ipswich, Yarmouth, Norwich, Ely, &c., to Bedford. In Cambridgeshire he found *Helix virgata* var *monozono* (should not this be *Subalbida* ?) and var. *subcarinata*, which is described by Moquin-Tandon as having the last whorl more flattened, and subcarinate. *Succinea putris* var. *alba* (the white var. named by Baudon) was found near Haverhill. Near Diss *Helix virgata* var. *bifasciata*, Bouch. was met with, it is white with two continuous brown bands above, and many more or less entire bands below. *Helix ericetorum* var. *deleta*, Moq., (which has the markings above the periphery suffused into a general brownish tint, or at least scarcely separable, while brown lines, more or less entire, are found below), occurred at Roxton, Bedfordshire

p. 281. J. W. Taylor. Describes *Helix pisana* var. *tenuis*, a new variety from Tenby, found by Mr. J. W. Storey. It is exceedingly thin and translucent, and almost uniformily horn colour, traces only of two translucent bands being visible near the mouth. It appears to be an example which has failed to secrete either pigment or carbonate of lime in the construction of its shell.

ARION CIRCUMSCRIPTUS, Johnston. = *Bourguignati*, Mab. Reading through the description of *A. circumscriptus* quoted by Pollonera in his recent work on the "Palæarctic Arionidæ," there at once dawned upon me the conviction that it was none other than *bourguignati!* The body little attenuated posteriorly, the bluish-grey sides, the narrow bands, the white sole – all point to *bourguignati*, leaving no room for doubt, so far as I can see. The absence of a keel in *circumscriptus* cannot be considered of importance, as the ordinary British form of *bourguignati* only shows a keel in juvenile specimens. Johnston's slug was described in the "Edinburgh New Philosophical Journal," 1828, and his name is the oldest one that can be certainly referred to what Mabillo, in 1868, called *bourguignati*, so I think there cannot be much doubt that *Arion circumscriptus* is the proper title for the species.—T. D. A. COCKERELL. Dec. 13th, 1890.

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EXCHANGE.

Duplicates.—Fine Hyale, Latona, Acis Arion, Galatea (dark), Phlœas (dark), Virgaurea (all Swiss), Sybilla (British). Desiderata—Many Eupitheciæ and Noctuæ in fine condition.—T. Maddison, South Bailey, Durham.

Duplicates.—*Petasites*, *Phragmitides*. Desiderata.—Genus *Boarmia*, *Tephrosia*, *Acidalia*, *Eupithecia*, and many others. Please send list of Duplicates.—Joseph Collins, Lilford-st, Warrington.

Duplicates.—Boreata, Monacha, and others. Desiderata.—many common species to renew.—A. E. Hall, Norbury, Sheffield.

I have Vol. I of Ent. Weekly Intelligences in duplicate, it is in good condition and will exchange it for well got Lepidoptera. I would be glad to purchase or otherwise Entomologist Part 100, Vols. 2-5, and Ent. Annual for the years 1866-68 or 70 to end —A. E. Hall, Norbury, Sheffield.

American Lepidoptera. cocoons and crysalide of same. Americon Birds' eggs, Indian relics snd fossils for Exotic Lepidoptera other than European. South American, African and Australian especially desired.—L. W. Mengall, Reading, Pa., U.S.A.

Duplicates.—Fine bred specimens Turionana, Maritimana, Udana, Alpinana, Udana, Simpliciana, Badiana, Tanacetana, Atricapitana, Zephyrana, Francillana, Derasana, Leplastriana, Euphorbiana, Allisella, Conspicuella, Raskiella, Cricella, Alpella, Hepariella, Rhamniella, Schiffermillerella, Horridella, Hippophæella. Vilella, Eximia, Stettinella, Lantella, &c., lists exchanged.—G. Elisha, 122, Shepherdess Walk, City Road, N.

Duplicates.—Ulmata, Tristata, Rurea, Chrysitis, Arcuosa, Affinitata, Decolorata, Neustria and ova. Desiderata very numerous.—W. Brooks, The Gardens, Grange Hall, Rotherham.

Duplicates.—Davus, Tithonus, Blandina, Ulmata, Bipunctaria, Carpophaga, Farinalis, Bisetata. Desiderata. Many common species, pupæ preferred. — John E. Robson, Hartlepool.

Duplicates—Fulva, Fasciuncula, Furuncula, Arcuosa, Aprilina, Protea, Multistrigaria Albulata, Lariciata, Ocellata, Immanata, Cembræ, Lutealis, Trigonodactylus.—A. Adie Dalglish, 21 Princes st., Pollockshields, Glasgow.

Duplicates—Shells. S. corneum, A. anatina, N. fluviatilis, B. tenticulata, B. leachii, V, pscinalis, V. cristata, P. nitidus, P. vortex, P. contortus, P. hypnorum, P. fontinalis, L. glutinosa, L. truncatula, A. lacustris, S. putris, S. elegans, H. hortensis, H. arbustorum, H. cantiana. H. virgata, H. caperata, H, ericetorum, C. rugosa, &c. Desiderata—Other Shells or Natural History Spceimens—J. W. Boult, 17 Finsbury Grove, Fountain rd, Hull.

Wanted for the Exhibition of Donaciæ at the City of London Entomological and Natural History Society, on December 18th, Donacia obscura, D. impressa, D. crassipes, and other species of the genus. I should be very much obliged to any Coleopterist who will kindly lend me the above to exhibit on this occasion.—G. A. Lewcock, 73 Oxford road, Islington, N.

Duplicates.—Female Templi alive. Desiderata—Iris, Lineola, Galii, Bombyliformis, A. urticæ, Cænosa, Fagi, Auricoma, depuncta, pyralina, Cordigera, Flexula, Fluviata, Versicolor, Sicula, Contiguaria, &c.—J. Harrison, 7 Gawber road, Barnsley.

Wanted—Pupæ of Mendica, Lubricipeda, Menthastri and Urticæ ; will do my best in return.—Wm. Reid, Piteaple, N.B.

Duplicates.—Galii, Braemar Exulans, formicæformis and Hesperia Lineola. Desiderata—Rotundaria Teniatœ, ruberata and rubiginata vars., Albipuncta, Barrettii, Gnaphalii, Cribralis, Margaritellus, decrepitalis, pulveralis, Alpinellus, ericellus furcatellus, gigantellus, myellus, Adelphella, Abietella, Advenella, and well-marked local forms of any common Macro. Only perfect insects.—W. H. Tugwell, 6 Lewisham road.

Wanted—Many common Noctua, any Agrotis or Dianthecias—Northern forms for comparison with Southern. Also Biundularia, Atomaria, &c., from any district.—J. Henderson, 25 Madeira road, Streatham, S.W.

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C. A. Westerlund. *Fauna der in der Palaärctischen Region, lebenden Binnenconchylien*, Vols. I-VII., and Suppl., 1884-1890. This great descriptive work contains an account of all the species, and most of the varieties, of land and fresh-water mollusca occurring in the European region, of course including the British Islands. Although we should be very little disposed to admit so many species as Dr. Westerlund, or in other respects to follow him entirely, there can be no question that his elaborate work is of the greatest value, and, on the whole, quite the best book of reference for the inland mollusca of Europe. A good deal of adverse and perfectly just criticism as to detail is possible, as with Tryon's still larger work ; but it is only fair to remember that works of this cheracter can never be more than approximately perfect, because the material from which they are of necessity built is in itself largely faulty or imperfect. There are many changes from the nomenclature usually employed in this country throughout the work, and it will be useful to consider these in some detail :—

Hyalina.—The generic name is more correctly written *Hyalinia*, Agass. Férussac described no genus *Hyalina*. *H. cellaria*, var. *complanata*, is referred to the type, and var. *compacta* is a synonym of var. *silvatica*, Mörch. *H. stæchadica*, Bourg., is a supposed species found in France and Jersey. *H. nitens*, Mich., is kept as a good species. *H. radiatula* becomes a synonym of *H. hammonis*, Ström, with *viridula*, Menke, as a variety, or rather form. *H. fulva*, var. *mortoni*, appears as a species, *C. mortoni* (Da Costa), Jeff.

Helix.—The true *Helix nemoralis* of Linné is said to be really *H. hortensis*, Müll. ; but the Linnean name is dropped, and we get *H. nemoralis*, Müll. (non L.) and *H. hortensis*, Müll., the names as before. This, however, does not accord with strict priority. Under *H. arbustorum* a paper by Dr. Servain is quoted, in which the varieties *alpicola*, Fér. (= *alpestris*), *feroeli*, Bourg. (= *conoidea*), *repellini*, and *trochoidalis*, appear as *species ;* but of course it is to be remembered that Dr. Servain's "species" are mostly what we should consider varieties. The var. *canigonensis*, Boubée, which has recently been recorded as British, is also called a species. *H. cartusiana*, var. *rufilabris*, is said to be the same as *carthusianella*, Drap. In the *Trichia* group we get some innovations. Two supposed species are quoted from our islands : *H. abludens*, Locard (Jersey, Ireland, France), and *H. striolata*, C. Pfr.

(England, France, Germany). *H. hispida*, v. *nana*, is considered a valid species; but *H. concinna* appears as *hispida* var. *H. hispida*, var. *subglobosa*, Jeff., is called a variety of *H. sericea*, Drap (non Jeff.) *H. granulata* is quoted *only* as British. Under *Xerophila*, *H. caperata* is sunk as a synonym of *H. intersecta*, Poir., and var. *gigaxii* is considered a distinct species. *Helix ericetorum*, var. *devians*, West, is recorded from England (near Clevedon); and var. *instabilis* is regarded as a species. *H. acuta* of our lists is not Müller's species of that name, but is *H. barbara*, Linn. *H. pulchella* and *costata* appear as separate species. *H. lapicida*, var. *albella*, Linn., is the earlier name for var. *albina*, Menke.

Pupa.—*P. secale*, var. *boileausiana*, is called a species. Under *P. anglica*, a var. *gunhildæ*, Wst., is recorded from near Scarborough. *P. umbilicata*, Drap., is correctly referred to the older *P. cylindracea*, Da C. *P. marginata* is placed under *P. muscorum*, Müll. (non L.); Linné's *muscorum* is said to be *avenacea*. *P. edentula*, var. *columella* of authors, becomes *P. gredleri*, Cless.

Balea.—*B. perversa*, var. *lucifuga* (Leach), Bgt., is quoted from England.

Clausilia.—Our *C. rugosa* becomes *C. bidentata*, Ström.; and vars. *exigua*, West, and *elongata*, Cless., are quoted as from England. *C. dubia*, no doubt correctly, is kept as a species, with an English variety, *suttoni*, West.

Cionella.—This generic term is used to include our *Cochlicopa* and *Cæcilianella* (*Achatina*, Jeff.) *C. lubrica*, var. *minima*, is referred to var. *exigua*, Menke; and a var. *collina*, Drouët, is recorded from England.

Succinea.—*S. putris*, var. *trianfracta*, Da C., is English. *S. virescens*, Jeff., is *S. stagnalis*, Gass. *S suecica*, Cless., is *S. parvula*, Pascal. *S. acuta*, Pfr., is probably *S. putris*, v. *limnoidea*. *S. elegans*, v. *baudoniana*, is a form of *S. pfeifferi*, v. *elata*, and it seems doubtful whether we have true *S. elegans* in England after all. *S. pfeifferi*, var. *brevis*, should be credited to Pascal; var. *intermedia* is perhaps the same as *contortula*. *S. pfeifferi*, var. *propinqua*, Baud., is not given as British, but it has been recorded from these islands, and was only accidentally omitted from the *Brit. Nat. Cat.* *S. oblonga*, var. *humilis*, Auctt., is referred to form *impura*, Htm.; the true *S. humilis* is something different.

Carychium.—*C. minimum*, v. *curtum*, is considered identical with v. *inflatum*, Htm.

This finishes the changes in the land shells that seem worth notice; later, the fresh-water species will have to be considered.—T.D.A.C.

SHELLS NEAR DONCASTER.—The following shells occurred *all in or by one pond* at Adwick, near Doncaster, on June 16th, 1887:—

Succinea putris, *S. elegans*, v. *minor*, *Limnæa peregra*, *L. truncatula*, *L. truncatula*, v. *elegans*, *L. palustris* and vars. *albida* (two), *tincta* (several), and *lacunosa*; *Bythinia tentaculata*, *Physa hypnorum*, *Planorbis spirorbis*, and monst. *scalariforme*, *P. complanatus* and var. *rhombea*, *P. vortex*, *Limnæa glabra*, *Pisidium* (two species). *Helix nemoralis* on the edge of the pond.—GEO. ROBERTS.

Vertebrata.

"WHAT IS A BIRD?"

BY LINNÆUS GREENING.

What is a bird? is one of those simple questions which are far easier to ask than answer. Some would say it is an animal that can fly; true, but other animals than birds possess this power, as, for instance, bats and the majority of insects, so this definition is not satisfactory. Besides, we must remember that there are many birds which cannot fly, such as penguins amongst sea-birds, and the ostrich amongst land ones. To begin at the beginning of an animal's life is the best way to get at its proper position amongst the multitudinous forms of life that have existed, and now exist, around us. Our researches will take us back far away to a time when our present species were not yet formed, and when, indeed, such animals as birds had, strictly speaking, not yet appeared.

How then, and by what wonderful process have these beautiful beings come into existence? Ages ago, in the carboniferous period, when our present coal-beds were tropical forests and jungles, inhabited by a fauna markedly different from any that have since existed. The highest living animal was a kind of newt, at least an animal which was of such curious structure that it is hard to say whether it was a newt or a reptile. Of course, if we wished, we might go still further back amongst the bygone ages in search of the ancestors of birds, till we came to the border-land of vegetable and animal life, when, apparently, our earth was only fitted to be the habitation of such lowly organisms as the protists; but this would detain us too much, and if we begin with the earliest fossil reptile, it will be quite enough for our purpose.

In attempting to discover the origin of birds, our researches will conduct us to the ultimate question of the origin of life. It must, however, suffice to say that, so far as we know, life always comes from pre-existing life, *i.e.*, we have no experience of what has been called spontaneous generation, and our knowledge tends to shew that all living forms have descended from a simple primitive form, and that you and I are, in a sense, a part and parcel of that first life which started on our globe æons ago.

With the doubtful exception of *Archegosaurus*, and one or two allied forms which may be regarded as transitional from the Batrachians, reptiles first appeared in the Permian epoch. These earliest reptiles were lizards, and from these distant ancestors there has been an uninterrupted chain of descent to our existing reptiles and birds. This may seem a large assertion, but it is a true one. As previosly stated, the first indisputable traces of true reptiles occur in strata of Permian age, and here it may not be out of place to lay stress on the enormous lapse of time which each geological period represents. Some of these periods may be measured by tens of thousands, but most of them by hundred of thousands of years. As an illustration it may be taken as absolutely certain that those who estimate the duration of the carboniferous period alone at 120,000 years are very much below the mark.

The remains of reptilian life found in rocks of Permian age are not nearly so varied and extensive as those of succeeding periods, such as have been found make it certain that reptiles of types presenting marked variations from those of the previous Permian age were in existence; and in the more extensive reptilian remains of the next period, these variations are still further developed, and we find forms diverging very considerably from those of their Permian ancestors. It may perhaps make this more clear if I mention that the few land lizards of the Permian are succeeded in the Triassic period by considerably modified forms of land reptiles, and also by some most extraordinary marine reptiles, such as *Ichthyosaurus* and *Plesioraurus*, whose gigantic size and ferocity made them the terror of the sea. We are not, however, concerned with these marine forms, but with their terrestrial cousins, some of which began to shew distinctly bird-like structures in various parts of the skeleton. Some of these reptiles attained an enormous size, and presented most curious and almost incredible modifications of structure.

The *Iguanodon*, with a body about 25 feet long, habitually assumed an erect attitude. It is difficuit to picture to ourselves the appearance of a creature much heavier than a hippopotamus, and longer than a crocodile, sitting and moving in kangaroo fashion. That such creatures have existed there is no doubt, for we find their remains, and from them can build up the skeletons as certainly as those of existing reptiles. As far as can be judged from the skeletons, most of these huge reptiles had air-sacs extending into the bones, thus lightening, without weakening, the framework, just as is the case with most birds. It would be extravagant to suppose that a reptile ever directly produced a bird ; but it is obvious that all existing reptiles and birds are descended from a common reptilian ancestor. So far, the order of the fossils from the carboniferous, through the Permian, Trias, and Lias, to the Oolite period, has shewn us an unbroken chain—from the lower to the higher—from the newt to the highly specialized reptile, though, till this Oolite period, there are no fossils of true flying reptiles or birds. You will note that the facts so far accord with the doctrine of descent ; if, on the contrary, the higher preceded the lower—that is to say, if it could be shewn that birds occurred before reptiles, the evolutionary theory would fall to the ground ; but the more knowledge we gain the more certain does it become that the lower has always preceded the higher, and that the doctrine of descent is true. Of course, you must not think that the lower forms have any desire to become other than what they are, their modifications arise from variation, are perpetuated under the laws of heredity and natural selection, of which they have no consciousness ; but in the struggle for existence, those only which can adapt themselves to their surroundings will survive and multiply.

It is not asserted that the environment makes the organism, though it is scarcely possible to lay too much stress on its importance in modifying it. The most trifling change in the surroundings of either plant or animal must produce some effect on that plant or animal, though this effect may be far too slight to be measured. Much of the difficulty attending the study of variations amongst living organisms arises from the complexity of the definite, though minute, influences of the environment, which produce definite, though minute, effects. The position of an egg in a nest, for instance, will have some effect upon a chick hatched from it. One egg may get a little more or a little less warmth than another, and this must exert some influence on the developement of the embryo. It is well to bear in mind these difficulties attending the study of variation, even amongst animals that we can closely observe, for we have reason to suppose that early in the secondary period variations amongst reptiles would go on more rapidly than to-day, because the only other terrestrial vertebrates were a few small mammals of the marsupial group, whose descent can be traced from Batrachian ancestors.

That amongst these variations some were in an ornithic direction there can be no doubt; but before going further into this matter, I would point ont the striking resemblances—both morphological and physiological—which force all competent observers to recognize the intimate relationship between reptiles and birds, and have induced systematic naturalists to place them in one group, viz.: the Sauropsida.

In the skeleton of all Sauropsidans the skull articulates with the vertebral column by a single articulating surface or condyle. In this respect they differ from other vertebrates, for both in the lower group, Batrachians, and the higher group, the mammals, the skull articulates by two condyles.

A further striking feature of the Sauropsidan skeleton is the lower jaw, each ramus, or half of which, is composed of several pieces, and articulates with the skull, not directly, but by the intervention of a peculiar bone called the quadrate.

Amongst the physiological characters of Sauropsidans, perhaps the most striking fact is that in all, the red-blood corpuscles are oval nucleated discs. It is true that the colored blood corpuscles of the Batrachians are also nucleated and oval; but it must be remembered that the largest colored corpuscle of the largest reptile is very much smaller than the smallest colored corpuscle of the smallest Batrachian; and though the temperature of birds is very much higher than that of reptiles, higher even than that of mammals, yet the close similarity, both in size and shape of the red corpuscles, indicates a close relationship, and what, from a geological point of view, must be regarded as a comparatively recent descent from a common ancestor.

As is the case in some other groups, the red corpuscles of the embryo bird are distinctly larger than than those of the adult, and this fact surely looks the same way as those previously quoted.

All Sauropsidans reproduce by eggs. There are a few apparent exceptions, in which the eggs are retained within the body of the mother; but the exceptions are only apparent and not real; and in several groups of reptiles the eggs are protected by shell, similar to the egg of a bird.

Again, in watching the development of the chick in an egg, we find that it passes through what may be called a reptilian stage—*i.e.*, the tail is precisely like that of a lizard; but we shall refer to this point later on.

(To be continued.)

Reports of Societies.

ENTOMOLOGICAL SOCIETY OF LONDON.

January 21st, 1891—The 58th Annual Meeting. The Right Honourable Lord Walsingham, M.A., F.R.S., President, in the chair. An abstract of the Treasurer's accounts having been read by Mr. Herbert Druce, one of the Auditors, the Secretary, Mr. H. Goss, read the Report of the Council. It was then announced that the following gentlemen had been elected as Officers and Council for 1891:—President, Mr. Frederick DuCane Godman, M.A., F.R.S.; Treasurer, Mr. Robert M'Lachlan, F.R.S.; Secretaries, Mr. Herbert Goss, F.L.S., and the Rev. Canon Fowler, M.A., F.L.S.; Librarian, Mr. Ferdinand Grut, F.L.S.; and as other Members of the Council, Prof. R. Meldola, F.R.S., Mr. Edward Saunders, F.L.S,, Dr. David Sharp. F.R.S., Mr. Richard South, Mr. H. T. Stainton, F.R.S., Colonel Charles Swinhoe, F.L.S., Mr. George H. Verrall, and the Right Honble. Lord Walsingham, M.A., F.R.S. It was also announced that the new President had appointed Lord Walsingham, Prof. Meldola, and Dr. Sharp, Vice-Presidents for the Session, 1891-1892. Lord Walsingham, the retiring President, then delivered an address. After alluding to some of the more important Entomological publications of the past year, and making special mention of those of Edwards and Scudder in America, of Romanhoff in Russia, of the Oberthürs in France, and of Godman and Salvin in England, the President referred to Mr. Moore's courageous undertaking in commencing his "Lepidoptera Indica," on the lines adopted in his "Lepidoptera of Ceylon." Attention was then called to the unusual development during the past year of the study of those problems which have been the object of the researches of

Darwin, Wallace, Weisman, Meldola, Poulton, and others, and to the special and increasing literature of the subject. In this connection allusion was made to Mr. Tutt's "Entomologist's Record and Journal of Variation," to Mr. Poulton's valuable book "On the meaning and use of the Colours of Animals," and to the interesting and important papers and experiments of Mr. F. Merrifield on the subject of the variation in Lepidoptera caused by differences of temperature. After alluding to the International Zoological Congress held at Paris during the past year, and to the rules of nomenclature which had been once more reviewed and revised, the President concluded by referring to the losses by death during the year of several Fellows of the Society and other Entomologists, special mention being made of Dr. J. S. Baly, Mons. l'Abbé de Marseul, Mr. Owen Wilson, Mons. Lucien Buquet, Mons. Eugene Desmarest, Prof. Heinrich Frey, Dr. R. C. R. Jordan, Mr. W. S. Dallas. Dr. L. W. Schaufuss, Dr. Hermann Dewitz, Mons. Lewis Reiche, and Herr Peter Maassen. A vote of thanks to the President and other Officers of the Society having been passed, Lord Wolsingham, Mr. Goss, and Mr. Grut replied, and the proceedings terminated.—H. Goss, *Hon. Sec.*

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

January 1st, 1891.—Mr. Tutt exhibited a box of Lepidoptera received from Mr. W. Reid of Pitcaple, including a fine series of dark forms of *Agrotis pyrophila* ; a very variable selection of *Triphæna orbona*, the fore wings of which varied from light drab, through red brown to almost black ; *Melitæa artemis*, several fine vars. ; a series of *Melanippe fluctuata* var. *neapolisata*, *Fidonia piniaria*, and *Abraxas grossulariata*, the males of which had a tendency to be very dark, while the females were comparatively pale. Mr. J. A. Clark exhibited a very variable series of *Dianthœcia conspersa* from Lewis. Mr. Heasler exhibited *Dromius meridianus*, *D. quadrimaculatus* and *D. quadrinotatus*, all of which he had taken during the Christmas holidays, also for comparison several other species of the same genus.

Thursday, *January 15th*, 1891.—Mr. J. A. Clark, President, in the chair. Exhibits : Dr. Buckell. a butterfly from India, with the undersides of wings marked like a dead leaf. Mr. Tutt, long series of intermediate forms of *Miana strigilis* and *M. fasciuncula*, and remarked on the impossibility of separating these specimens into two species, as there were no structural differences wherewith to distinguish them. In reference to the larvæ, he said that he had lately seen five descriptions, all of which were totally different, thus proving that the larvæ were very imperfectly known. Mr. Simes exhibited a specimen of *D. galii*, taken at Clapton. 12th, August, 1890. Mr. Clark, a pinkish variety of *Aplecta occulta*, bred ; also *Pogonocherus hispidus*, *Rhizotrogus solstitialis*, *Necrophorus mortuorum*, and *Blaps similis*. Mr. Heasler, a series of *Coccinella variabilis*.

The Secretary read a paper by Mr. R. Gillo of Bath, on the "Colours of Animals.' He stated that the present coloration of animals had been brought about by natural selection, and the survival of the fittest, which tended to produce an effect advantageous to the animal. He divided the subject into eight parts, as follows :—

1. *Protective colouring.* A very large number of animals have acquired a colour which harmonizes with their surroundings. In order to see this, we must study them in a state of nature. *E.g.* The stripes of the tiger accord with the rank grass of the country which it inhabits ; polar animals are white, and animals frequenting deserts are uniformly sand-coloured.

2. *Variability of colour.* Animals which occur in different localities vary to suit their surroundings. Further, some animals, especially reptiles and fishes, have the power of changing colour when removed from light to dark places, or *vice versâ.* Larvæ of *A. betularia* reared amid green leaves and shoots are green ; while those fed among twigs assume the brown colour, with the exception of about 2 per cent, which are green.

3. *Warning colouring.* Brilliantly coloured animals are usually protected by stings, or are unpalateable to their enemies. Thus their conspicuous hues serve as danger signals, and help to secure their safety. Brightly coloured larvæ are avoided by birds, while green or brown ones are eaten.

4. *Mimicry.* Animals protected by stings or otherwise, are often mimicked by others, who thus share their immunity from attacks of enemies. Wasps are mimicked by insects of other orders. Some insects resemble pieces of stick, leaves, &c.

5. *Alluring mimicry.* Certain animals allure their prey by imitating objects which are attractive to them. A species of *Mantis* from India resembles the flower of an orchis, thus attracting various insects on which to feed.

6. *Aggressive mimicry.* A fly (*Volucella bombylans*) the larvæ of which feed in the nest of the Humble-bee, mimicks the latter insect, and so gains access to its nest.

7. *Recognition markings.* Animals which live in colonies usually develope some mark by which they are able to recognise one another. Rabbits are enabled to gain a shelter from danger by following the small white tails of others that are nearer their burrows.

8. *Sexual selection.* Females of some species exhibit a preference for the most brilliantly coloured males. This has led to the special adornment of the males, and to the general improvement of the species.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY ASSOCIATION.

January 8th, 1891.—W. H. Tugwell, Esq., Vice-President, in the chair. Messrs. H. Williams of Hornsey, and T. G. Washford of Dulwich, were elected members.

Mr. R. Adkin exhibited *Boarmia repandata*, bred from ova obtained from a moth taken at Westerham. During hybernation the larvæ were divided into two equal lots, the one kept on growing privet and the other on growing birch, although each lot produced some few individuals, varying from the majority, there was no marked difference between the bulk of the one lot and the other. Mr. Adkin also exhibited *Retinia buoliana*. Schiff., snd *R. pinicolana*, Dbl., bred from larvæ collected in the neighbourhood of Poole, the New Forest and Surrey. Those from Poole and the New Forest emerged between June 26th and July 27th and were all *buoliana*, those from Surrey emerged between July 12th and August 3rd, from July 12th to 22nd, all *buoliana*, from July 25th to August 3rd, all *pinicolana* with the exception of one *buoliana*, bred on July 27th. Mr. Tugwell exhibited two series of *Miana strigilis*, and *M. fasciuncula*, and referred to the statement recently made by Mr. Tutt that the two species were only forms of one, he having received specimens which were intermediate between the two forms, from the Rev. W. F. Johnson of Armagh. Mr. Tugwell said this statement had considerably surprised him and he at some length pointed out what he considered were the differences between the two, he also referred to the published descriptions of the larvæ respectively made by Newman and Buckler. Mr. Fenn remarked that he did not think Newman's descriptions of larvæ were very reliable as that gentleman never adopted any system in describing them, he thought also that larvæ varied so much in their different stages that the descriptions of solitary larvæ were of very little value, Mr. South expressed an opinion that the two species were undoubtedly distinct, in which opinion Mr. Barrett concurred, pointing out what he considered good distinctions between the two, adding that the larvæ which were internal feeders were very difficult to obtain and rear, and would no doubt vary considerably, although he had never himself bred any of the *Miana*. Mr. Tutt said that he considered the points of difference alluded to were only superficial and unsatisfactory, the remarks made by him as to the two species being identical were based not on an isolated specimen of the form received from Ireland but on a long series of the form which was certainly intermediate between *strigilis* and *fasciuncula*, he would however at a future meeting exhibit the specimens referred to. Mr. Tutt, on behalf of Mr. Reid of Pitcaple, exhibited long series of *Agrotis pyrophila*, a fine series of *Triphæna orbona*, varying from pale to very dark, some of the specimens being beautifully banded, very bright forms of *Melitæa artemis*, also dark examples of *Melanippe fluctuata*, and some specimens of *Abraxas grossulariata*, this species Mr. Tutt stated had been introduced by Mr. Reid in the vicinity of Pitcaple with some success and had apparently developed sexual dimorphism, the ♂'s becoming darker and the ♀'s paler every year. Mr. Manger shewed a small collection of Coleoptera from Australia.—H. W. Barker, *Hon. Sec.*

The Report of the Meeting for January 22nd has not reached ns.—[*Ed. B.N.*]

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.

The Annual Meeting was held on Monday, January 12th, when Mr. S. J. Capper, F.L.S., F.E.S., was re-elected President; the Revd. H. H. Higgins, M.A., Vice-President; and Mr. F. N. Pierce again undertook the duties of Hon, Secretary.

The President then gave a lengthy address in which he reviewed the history of their Society, and the work it had done, and had yet to do. He urged that their investigations of the Coleopterous Fauna should be extended to the whole of the counties of Lancashire and Cheshire, as had been done by Dr. Ellis for the Lepidoptera, and that other orders be taken in hand. He also proposed that the Society should undertake the investigation of the life history of each individual, and ascertain whether it is beneficial or injurious, so as to encourage its preservation or extirpation. He advised the formation of a tyhical collection of all orders of insects. He reviewed the work of Miss Ormerod and others on injurious insects, and said such investigations were now being undertaken in many other countries. He then referred to the doings of collectors during the past year, and the general scarcity of insects in all orders. New species were briefly noticed, including *Hesperia lineola*, and *Plusia moneta*. The re-appearance on the Cotswold Hills of *Lycæna arion* was mentioned and the capture of other rarieties. Other orders were similarly dealt with, the changes in Magazine Literature briefly noted, and a most interesting address included with a brief notice of the work and death of the late Owen S. Wilson, F.S.C.—F. N. Pierce, *Hon. Sec.*

Notes.—Vertebrata.

The Bittern near Warrington.—On 7th December, a Bittern *(Botaurus stellaris)*, a bird of considerable rarity here, was shot by my brother in a marshy reed bed at Longford, about a mile and a half from the centre of this town. It was about half-past eight in the morning when he saw it. It had allowed him to come close to it before it flew, and its appearance being so unexpected, he was too much astonished for a moment to fire at it, and it got a considerable distance away before he brought it down. It has proved to be a male bird, and was beautifully clean shot. It weighed 1 lb., 14 oz., 5 drms. Its dimensions were – 44½ inches across the expanded wings, and 37 inches from the tip of the bill to the end of the tail. It is now with Mr. J. H. Pickin, of Manchester, for preservation.

About 10 years previously a Bittern was shot on Sutton rifle range, near St. Helen's. The person who shot it knew nothing about it, and threw it on a manure heap, from which it was picked up by someone more intelligent, taken to a taxidermist's, who would have been glad to purchase it, but its fortunate finder refused to sell his prize.

There is also a Warrington record in "Morris's British Birds" of a Bittern shot on the banks of the Mersey, at Thelwall, in 1854, some 36 years ago.—Jos. Collins, Warrington.

The Kingfisher at Hartlepool.—I obtained a fine specimen of this bird in the beginning of December. There were a pair of them flying about the "stells," as we call the small, sluggish streams about here. No doubt they had been driven down by the hard weather. It seemed a pity to shoot so beautiful a bird, as it is becoming so scarce; but I consoled myself with the idea that if I did not, someone else would. The other escaped my gun, and I have not heard of it being shot, so perhaps it escaped.—J. J. Cambridge, Hartlepool.

Review.

GUERNSEY SOCIETY OF NATURAL SCIENCE AND LOCAL RESEARCH.

Two volumes of the Report and Transactions of this Society have reached us, the first including the period from the establishment of the Society in 1882 to the year 1888, the second, the year 1889 only. They shew that the Society, though only numbering 37 members, is doing more useful work than many another with much larger membership and wider sphere of action. By the rules, the objects of the Society are declared to be :—" To give mutual aid in the study of the various branches of Natural Science," and " the drawing up of correct lists of the various animals, plants, and minerals, indigenous to Guernsey." These are very ordinary rules ; but it is to the manner in which the members interpret the last rule to which we would draw attention, and commend the attention of other Societies. They take nothing for granted. Every record must be verified before they allow it to pass as correct. Not that they overlook or ignore old records. They are all noted as matters requiring verification, as work for the members to accomplish. Lists prepared in this careful way are always satisfactory, and the Society is doing honest, good work. Another point to which attention should be given is the refusal of the members to divulge localities, at the risk of the species being eradicated. I quote a passage from " The Ferns of Guernsey," in the first Volume, relating to the discovery in that island of the "Jersey Fern" *(Gymnospgramma leptophila)*:—" Forthwith I was waited upon by half-a-dozen individuals, all anxious to commence the work of extermination ; a carriage was at my service ; would I be kind enough to come and point out the spot where it was to be found ? I was hard-hearted enough to refuse, and to keep my own counsel." The more important papers published are the Butterflies and the Nocturnal Macro Lepidoptera, the Ferns, the Flowering Plants, and several on the Marine Zoology and the Geology of Guernsey and the neighbouring islands of Sark, Herm, and Lihou. The Society possesses an excellent museum, the contents of which are almost exclusively confined to the local fauna.

Botanical Note.

Oak Tree growing in Water.—In the autumn of 1883 I placed an acorn, which was just showing signs of sprouting, in the neck of a clear glass bottle, filled with water, the water nearly up to, but not touching, the acorn. Throughout the winter the root continued to grow downwards amongst the water, branching out in various directions, and when the spring came it produced a stem, and put out a few leaves. From that time up to 1889, or for six years, it continued to grow—but very slowly, and the number of leaves not increasing very much from year to year. In 1889, after putting out a couple of leaves, it died.

What I would desire to ask is, if you, or any of your readers, can say if, by the addition of any chemical substance dissolved in the water to supply the earthy matters needed to sustain the plant, a more luxuriant growth and longer existence might have been obtained.—Henry T. Robson, Stockton-on-Tees.

Insecta.

Notes.

American Notes.—I have been greatly interested in noticing the differences and resemblances between some of the British species you sent me and those occurring here. *Pyralis farinalis* is identical with ours, with us it is a very common species. *Lycæna alsus* is very like our *L. comyntas*, which is also the smallest species we have in New York State; in California, *L. myrina* is smaller. The ♂ of our *comyntas* is blue, the ♀ brown. All our Lycænidæ were unusually scarce this season.—Emily L. Morton, New York, U.S.A.

Aberration of Liparis Chrysorrhœa.—In the collection of my friend, Mr Gardner, there is a very peculiar aberration of *Liparis chrysorrhœa*. It is rather small in size but the wings on the right side are much streaked and suffused with dark brown scales. Both the fore and hind wing are margined with dark scales, and the fringes are dark, the medium vein of forewing, and all the veins on the hind wing are also suffused with these dark scales, and the hairs of the thorax are of the same shade. The specimen is an old one, and was sent to him in October 1873, by Mr. Seabrook, of London.—John E. Robson, Hartlepool.

Variety of Arctia Caja Bred.—I have this day (17 January), bred and set a nice variety of *Arctia caja.* It is one of a brood of larvæ noted below. They were fed upon white dead nettle. The mother moth was a fine rather light coloured specimen, brought me here by a little boy on 1st September. Her first daughter is a rather small specimen, entirely without the St Andrew Cross near the outer end of the wing, which is so persistent in all ordinary forms of this beautiful and variable species. The spots on the under wings are larger and chained together, differing from the parent, in which they are neither large nor united. I feeld isposed to attribute the small size of the specimen to the excessive dryness of the atmosphere (on the kitchen chimney-piece), where they were fed and kept.—C. S. Gkegson, Liverpool.

Late Emergence of Pæc. Populi.—In looking into one of my breeding cages to-day (January 25th), I was surprised to find a freshly emerged pair of *P. populi.* They were in an unheated greenhouse, and the last emergence, from the same brood, took place on the 20th November last. I had expected that the few pupæ which had not then emerged, would have either done so early in December, or would have lain over for another year.—J. Maddison, South Bailey, Durham.

Luperina luteago v. Barrettii.—I took eight *Barrettii* last year—in a fortnight—but it was a bad season for it. I have been working for pupæ with some amount of success, but expect to find it more plentiful in its Waterford locality, where I purpose to go in search of it.—E. R. Curzon, Dublin.

Miana strigilis.—This species certainly does come out during sunshine, and whilst hunting for Longispcornes, I have frequently not only seen them sitting on the flowers of *Heracleum sphondylium*, but I have also boxed them. About three years ago I saw a number of specimens in this way at a field near Surbiton. They were not exactly in a state of repose, but settled, with the wings raised, like *Dipsacea.*—G. A. Lewcock, Islington, N.

Retinia resinana.—I bred 8 or 9 specimens of *Resinana* out of 13 I had sent in October. I put some sand in a square earthenware pan, with holes in the bottom (used by gardeners); of course, covering the holes over, and put them out in the open air, covering them with wire netting to keep cats off. I stuck the twigs in the sand and left them out all through the winter—in all weathers. At times they were piled with snow, but I think it best to imitate nature as much as possible. They pupate in the resinous substance, and leave the cases sticking out when they emerge.—GEO. ELISHA, Shepherden Walk.

Larvæ.

PIERIS BRASSICA LARVÆ.—In strong contrast to Mr. A. E. Hall's note (ante. 8), I may meution that in the autumn of 1889, I collected some half-gross of these larvæ (mostly full fed), and many of *P. napi*. They were feeding on the common Nasturtium leaves, on plants climbing up the back of my house. Everyone of these duly changed to pupa, and the perfect insects appeared last May—not a single ichneumon in the whole lot. I must admit, though, that "egg spitted" larvæ are generally to be seen in numbers on fences, and it is perhaps as well that the larvæ is so often thus affected, otherwise it would be even more destructive in gardens, &c., than it is.—E. SABINE, The Villas, Erith, Jan. 24, 1891.

HIBERNATING OF ARCTIA CAJA LARVÆ.— Early in September last (3rd to 6th) I had 440 eggs deposited by a ♀ of *Arctia caja* in three batches, on three different days. The first batch hatched out in a few days, fed up rapidly in a warm room, and made up on October 20th. The second batch hatched on the 21st day, fed slowly, and hibernated when about half grown. The third batch did not hatch till the 34th day, and hibernated very small on 15th November.—C. S. GREGSON, Liverpool.

LARVÆ OP A. CAJA HIBERNATING (J. E. Robson, ante 9).—I have for years noticed the tendency of the second brood of these larvæ to outrun one another in growth. Sometimes only a few will be thus affected, at others many. When this is the case I always endeavour, by warmth and other means, to coax them up to maturity and pupation, (about 15 years ago I bred several imagines on Christmas Day), as I have found that unless they can be got into the pupal stage, they invariably die off sooner or later, whereas those larvæ that have given over feeding in the early stage can generally be carried safely through the winter and early spring, until the feeding time again comes round.

The same remarks apply to *A. villica.*—E. SABINA, The Villas, Erith, 24th January, 1891.

ABUNDANCE OF B. RUBI LARVÆ.—I had a fortnight in Sutherlandshire in September; but the weather was miserable, and I saw very few insects on the wing, though larvæ, such as *B. rubi*, *A. fuliginosa*, and others, were plentiful. *B. rubi* swarmed on the heather in Strathmore. You shall have an account of the imagines I captured in my next.—JOHN MACKAY, Glasgow.

LARVÆ OF AGROTIS NIGRICANS, TRITICI, VALLIGERA AND OBELISCA.—You ask me if I know the larva of *A. nigricans*, and can differentiate it in appearance and habit from that of *Tritici*, and *Tritici* from that of *Valligera*. Yes; aside from all microscopy and minute detail, I would describe the general appearance as follows:—

A. nigricans.—Large, cylindrical; often deep brown-ochre colour in the dorsal region, with a series of faint lozenge-shaped markings on the back, side rather striped, and a rather distinct whitish line along the spiracles. It eats roots and leaves of red clover, and almost any low plant. It feeds at night, and buries in the soil.

A. tritici.—Dull, glass-like, much smaller than the last, but stout, slightly attenuate; it has scarcely any colour—say shiny, dirty greyish, often without noticeable markings. It feeds at night, on weeds, on the sand hills, and may be found during May and June buried at the roots of *Cerastium*, about one inch below the surface of the sand.

A. valligera.—Much larger than *Tritici*, slightly striped; colour dull olivaceous, with dots between the stripes. Sometimes these stripes and dots can scarcely be traced.

A. obelisca larva is large; dorsal streak chocolate colour—not the colour of chocolate paste, but a purplish-brown. I have dug them in Ireland from ledges where little but grass and bird's-foot trefoil grew. These produced large, fine specimens, much larger than Scotch *Obelisca*, of which I had examples no larger than ordinary *Tritici*.—C. S. GREGSON, Liverpool.

THE PTEROPHORINA OF BRITAIN,

By J. W. Tutt, F.E.S.

Amblyptilia, Hb.

Like *Cnæmidophorus*, this is another very restricted genus, only two species being known to inhabit the European area, and both these are found in Britain. Two species also, are found in the Nearctic region, one of which is common both to the Palæarctic and Nearctic, viz. : –*punctidactyla* ; but the commoner *acanthodactyla* does not appear to occur in America. Like *Playptilia*, the members of the genus *Amblyptilia*, have the apex of the anterior wings much angulated, but the genus is otherwise very distinct. Both the European species are dark but the American *pica* has a white ground colour. This genus is thus characterised by Wallengren (Dr. Jordan, "Entomologist's Monthly Magazine," Vol. VI., p. 121) :—"Antennæ of both sexes with very short cilia. The forehead ornamented with a very short pyramid of scales. Palpi longer than the head, thick, laterally compressed, ascending with the last joint short, slender, and pointed. Legs slender, long, the tibiæ only in the least degree thickened towards the apex. First pair of spines in the posterior tibiæ nearly equal ; longer than the second pair. The anterior wings furnished with a tooth of scales on their inner margin, not cleft to the third part of their length. The segments broad, the posterior segment almost hatchet-shaped, the posterior angle of the segments well marked. The segments of the inferior wings slender, the third segment with the anal angle sufficiently distinct, nearer the apex, furnished with a tuft of scales. The anterior wings flat, covering the posterior when at rest."

With regard to the two British species in this genus, *punctidactyla* and *acanthodactyla*, there is some difficulty. They have similar habits, occur at the same time, and the larvæ present parallel ranges of variation. Mr Porritt, who has bred both species from larvæ, and readily distinguished them in the larval stage, is quite satisfied of their distinctness. Mr. South, who appears to have had no practical acquaintance with *punctidactyla (vide.* "Entomologist," Vol. XXII., pp 31-32 and 106, and more especially Vol. XVIII., pp., 97, 98), treats it under the synonym of *cosmodactyla* as a var. of *acanthodactyla*. In "Entomologist," XXII., p. 106, I wrote :—"Mr. Porritt says, 'I separated the larvæ quite easily before the moths were bred, at any rate, the two forms of larvæ produced the two forms of the moth, and *vide* "Entom. Mo. Mag." of Nov. 1886, and of Dec., 1885' *(in litt.)*;" and in answer to a query as to whether Mr. South would tell us why he placed them together, he wrote: "I cannot see any good and sufficient reason for separating them," and, I presume, considered that this statement would weigh with scientists against Mr. Porritt's practical knowledge. I shall, therefore, follow Mr. Porritt's conclusion, and treat them as distinct species.

Another difficulty remains. We have gradually become accustomed to call our *punctidactyla*, Haw., the *cosmodactyla* of Hübner. I fail to see the slightest resemblance. The greenish or olivaceous tint, which characterises Haworth's species, is totally absent in Hübner's figure ("Schmet." IX., 35-36) of the type, which may be described as follows: "♂ Anterior wings with the costa much arched and apex pointed. Colour, reddish-brown, with 5 pale, yellowish, costal streaks; the costa itself darker; a pale yellow line, parallel to hind margin, runs through the end of fissure, with another parallel to it, between it and the hind margin; both of these pale lines internally edged with black; the outer edge (beyond the outer pale line) greyish. Posterior wings dark brown, fringes shaded with greyish, and a black tuft on the third plumule." Fig. 36 is the under side of Fig. 35. My own remark is: "This represents a shorter, broader-winged, and hence stumpier insect altogether than *acanthodactyla*, and in no way appears to represent our *punctidactyla*." If we have Hübner's *cosmodactyla* at all, the name must be applied to the bright specimens obtained by Mr. Russ, which more nearly represent the coloration of Hübner's *cosmodactyla* than anything else that I have seen; but I should not like to say that the Sligo specimens really represent Hübner's *cosmodactyla*, or were anything more than a very distinct local race of *acanthodactyla*.

A. acanthodactyla, Hb.—This species is comparatively common both on the Continent and in Britain. It is a very distinct species, and hence has suffered but little at the hands of our synonymists.

SYNONYMY.—*Acanthodactyla*, Hb., "Schmet." IX., 23-24; Treit. IX., 2. 234; H.-S. 5, V., p. 369; Zell. "Isis" (1841), 784, "Linn. Ent. Zeit.," VI., 338; Dup. XI., 313, 6; Tgstr. Bidrag, 155; Frey 405. *Calodactyla*, Fab. Ent. Syst., 3, 2, 346; Haw. 478; Stephs. Ill., IV. 376; Wood 1646.

Imago.—This species has the anterior wings divided into two lobes, the apex angular, the colour of a dark reddish-brown, with a small dark streak near the centre of the costa; a dark triangle towards the apex, as in the species of the last genus; a broad, dark fascia running through both lobes, edged internally with whitish, externally with ochreous; fringes pale; a lobe of black scales at the centre of the inner margin, and another between this and the anal angle. Posterior wings are divided into three plumules, and are of a greyish-brown colour, the third plumule having a tuft of black scales on the inner margin. Hübner, in his "Schmetterlinge, &c.," Plate IX., Figs. 23 and 24, figures the type of this species. His Fig. 23 is a male, Fig. 24 a female. Fig. 23 may be described as having—"Anterior wings with the apex acute, the ground colour very deep, dull brown, with a reddish tinge; a small lobe extends outwards on the inner margin of the wing. Counting from the base to the apex, there are 5 black costal streaks, the last terminating at the fissure; a small, white, costal dot just above the fissure is followed by a slender white line, parallel to the hind margin which crosses the fissure. Hind wings—with the three feathers dark blackish-brown—with a tuft of scales on the last feather. Head, thorax, and abdomen the same colour as the wings." Fig. 24 may be described as having—"Anterior wings of a lighter brown, almost orange, with the markings more distinct; hind wings unicolorous brownish." Stainton's short diagnosis ("Manual," Vol. II., p. 441) is:—"9‴-10½‴ F.-W., *reddish brown*, with a dark brown costal triangle before the fissure, followed by a yellowish streak; a slender yellowish fascia near the hind margin is preceded by a dark blotch on each lobe; third feather of hind wings with a black tuft beyond the middle."

Variation.—Besides the sexual dimorphism mentioned above, there seems to be no striking development of variation in colour or markings in our British specimens. Mr. Percy Russ, however, gets a bright reddish-brown form, which may be this species, but of that I am not satisfied. Mr. South—"Entomologist," XXII., p. 31—appears to describe the ♂, then a var. *a.*, which would appear to be the ♀, and lastly treats *punctidactyla*, or as he terms it, *cosmodactyla*, as a var. *b.* This latter was probably done through insufficient information, as he—*vide* "Entomologist," Vol. XVIII., pp. 97, 98, and Vol. XXII., pp. 31, 32, and 106—appears to have had no personal acquaintance whatever with the species.

Larva.—The description of the larva, according to Mr. Porritt, is as follows :—" Length about half-an-inch, and of the usual stumpy form when at rest. Head small and narrower than the second segment, it has the lobes rounded, and is highly polished ; body cylindrical, attenuated a little posteriorly, each segment plump and distinct, making the divisions clearly defined ; skin soft and sparingly clothed with short hairs. There are two distinct forms, and intermediate varieties occur, partaking more or less of each of these extreme forms. Var. 1 has the ground colour deep purple ; head yellowish-grey or yellowish-brown, marked on the crown and sides with black, the mandibles brown ; medio-dorsal stripe smoke-coloured ; sub-dorsal lines, and another line of equal width below it, white, but interrupted and not very conspicuous ; and below these is another scarcely so pale line along the spiracles ; hairs and the distinct tubercles white, ventral surface and prolegs greenish olive ; anterior legs shining black, ringed with paler. Var. 2 has the ground colour bright pale green ; head as in var. 1 ; the dark, smoky-coloured pulsating vessel—in some specimens tinged with pink anteriorly—forms the dorsal stripe ; subdorsal lines indistinct—whitish ; below these is another line, but much interrupted, and broken into short lengths ; there are no lines along the spiracular region ; hairs and tubercles white ; ventral surface and prolegs of the bright green of the dorsal area ; the legs shining black, tinged with white" (" Entomologists' Monthly Magazine," Vol. XXIII., pp. 132, 133). The larvæ from which these descriptions were made were received from Mr. Eustace Bankes, of Corfe Castle, and Mr. H. B. Fletcher, of Worthing, and were found feeding on *Stachys sylvatica* on August 25th and September 27th. Mr. Porritt bred the species on August 17th and 19th in 1884.

Mr. H. D'Orville, of Alphington, writes :—" I have occasionally taken in my garden a specimen or two of *acanthodactylus*, and, not having any rest-harrow growing near, suspected some other food plant. I have just bred two specimens from pupæ I found firmly attached by the tail-ends to the flower stalks of a scarlet geranium growing in a pot. I had observed that the leaves and petals were eaten by some small larvæ, which induced the search" (" Entomologists' Monthly Magazine," Vol. II., p. 138). On the same page Mr. Stainton writes :—" Prof. Zeller found a larva of this species on a pelargonium, obtained from a gardener, on July 26th, 1846. It bored

2 FEB 91

EXCHANGE.

DUPLICATES.—American Lipidoptera and Coleoptera. Desiderata British or Exotic Bombycidæ and Sphingidæ.—Miss EMILY MORTON, Newburg, New York. New Windsor Delivery, U.S.A.

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DUPLICATES.—*Petasites, Phragmitides.* DESIDERATA.—Genus *Boarmia, Tephrosia, Acidalia, Eupithecia,* and many others. Please send list of Duplicates.—JOSEPH COLLINS, Lilford-st, Warrington.

DUPLICATES.—Boreata, Monacha, and others. Desiderata.—many common species to renew.—A. E. HALL, Norbury, Sheffield.

I have Vol. I of Ent. Weekly Intelligences in duplicate, it is in good condition and will exchange it for well got Lepidoptera. I would be glad to purchase or otherwise Entomologist Part 100, Vols. 2-5, and Ent. Annual for the years 1866-68 or 70 to end —A. E. HALL, Norbury, Sheffield.

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DUPLICATES.—Fine bred specimens Turionana, Maritimana, Udana, Alpinana, Udana, Simpliciana, Badiana, Tanacetana, Atricapitana, Zephyrana, Francillana, Derasana, Leplastriana, Euphorbiana, Allisella, Conspicuella, Raskiella, Cricella, Alpella, Hepariella, Rhamniella, Schiffermillerella, Horridella, Hippophæella. Vilella, Eximia, Stettinella, Lantella, &c., lists exchanged.—G. ELISHA, 122, Shepherdess Walk, City Road, N.

DUPLICATES.—Ulmata, Tristata, Rurea, Chrysitis, Arcuosa, Affinitata, Decolorata, Neustria and ova. Desiderata very numerous.—W. BROOKS, The Gardens, Grange Hall, Rotherham.

DUPLICATES.—Davus, Tithonus, Blandina, Ulmata, Bipunctaria, Carpophaga, Farinalis, Bisetata. Desiderata. Many common species, pupæ preferred. — JOHN E. ROBSON, HARTLEPOOL.

DUPLICATES—Fulva, Fasciuncula, Furuncula, Arcuosa, Aprilina, Protea, Multistrigaria Albulata, Lariciata, Ocellata, Immanata, Cembræ, Lutealis, Trigonodactylus.—A. ADIE DALGLISH, 21 Princes st., Pollockshields, Glasgow.

DUPLICATES—Shells. S. corneum, A. anatina, N. fluviatilis, B. tenticulata, B. leachii, V. pscinalis, V. cristata, P. nitidus, P. vortex, P. contortus, P. hypnorum, P. fontinalis, L. glutinosa, L. truncatula, A. lacustris, S. putris, S. elegans, H. hortensis, H. arbustorum, H. cantiana. H. virgata, H. caperata, H, ericetorum, C. rugosa, &c. DESIDERATA—Other Shells or Natural History Spceimens—J. W. BOULT, 17 Finsbury Grove, Fountain rd, Hull.

DUPLICATES.—Female Templi alive. DESIDERATA—Iris, Lineola, Galii, Bombyliformis, A. urticæ, Cænosa, Fagi, Auricoma, depuncta, pyralina, Cordigera, Flexula, Fluviata, Versicolor, Sicula, Contiguaria, &c.—J. HARRISON, 7 Gawber road, Barnsley.

Wanted—Pupæ of Mendica, Lubricipeda, Menthastri and Urticæ ; will do my best in return.—WM. REID, Piteaple, N.B.

DUPLICATES.—Galii, Braemar Exulans, formicæformis and Hesperia Lineola. DESIDERATA—Rotundaria Teniatœ, ruberata and rubiginata vars., Albipuncta, Barrettii, Gnaphalii, Cribralis, Margaritellus, decrepitalis, pulveralis, Alpinellus, ericellus furcatellus, gigantellus, myellus, Adelphella, Abietella, Advenella, and well-marked local forms of any common Macro. Only perfect insects.—W. H. TUGWELL, 6 Lewisham road.

Wanted—Many common Noctua, any Agrotis or Dianthecias—Northern forms for comparison with Southern. Also Biundularia, Atomaria, &c., from any district.—J. HENDERSON 25 Madeira road, Streatham, S.W.

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3. **Fungi, Lichens, etc.** By Peter Gray.
4. **Mosses.** By James E. Bagnall, A.L.S.
5. **Pond-Life.** By E. A. Butler, F.Z.S.
6. **Seaweeds, Shells, and Fossils.** By P. Gray and B. B. Woodward.
7. **Ants, Bees, Wasps, and Dragon-flies.** By W. H. Bath.
8. **Coins & Tokens (English)** By Llew. Jewitt, F.S.A. With a Chapter on **Greek Coins** by Barclay V. Head.
9. **Reptiles.** By Catherine Hopley.
10. **British Birds.** By H. A. Macpherson. [*In preparation.*
11. **Silhworms.** By E. A. Butler, F.Z.S.
12. **Land and Fresh Water Shells.** By J. W. Williams, J. W. Taylor, and W. Dennison Roebuck
13. **Fossils.** By J. W. Williams.
14. **The Microscope.** By V. A. Latham. [*In prep.*
15. **Introduction to Zoology.** By B. Lindsay [*In preparation.*
16. **Book Collecting.** By J. H. Slater. [*In preparation.*
17. **Marine Shells.** By J. W. Williams & others. [*In preparation.*
18. **Colonial Coins.** By D. F. Howorth.
19. **Grasses.** By F. Tufnail. [*In preparation.*
20. **British Ferns.** By E. J. Lowe.
21. **Pond-Life (Algæ, Diatoms etc.)** By T. Spencer Smithson
22. **Chess Problems.** By E. W. Rayner.
23. **Postage Stamps.** By W. T. Ogilvie.
24. **Flowering Plants.** By James Britten, F.L.S. [*In preparation.*

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into the buds, but he did not ascertain whether it fed on the leaves. Professor Frey also states that *acanthodactylus* is usually polyphagous, occurring on *Ononis spinosa* and *repens*, *Stachys speciosa* and *coccinea*, and the pelargoniums of our gardens." Jordan gives *Ononis arvensis* ("Entomologist's Monthly Magazine," Vol. II., p. 151) as a food plant.

The Rev. H. Williams writes :—"*A. punctidactyla*, I took some years ago in the autumn in the Clee Hill district of Shropshire, and afterwards bred two specimens from larvæ, found by a friend in the same locality, feeding on *Stachys sylvatica* ; the pupæ remained suspended to the spike on which the larvæ had fed.—On finding in this county (Norfolk), larvæ that appeared similar, feeding on the same plant, I expected to breed *punctidactyla*, but they all, without exception, turned out *acanthodactylus*" ("Entomologist's Monthly Magazine," Vol. XVIII., p. 212.

Pupa—The pupa appears to vary in ground colour to the same extent as the larvæ, the ground colour varying from pale green to dark purple, but getting darker in the paler forms just before emergence. In this species, as in the next, the antennæ cases are quite detached, and these, with the two curious curved portuberances specially characteristic of this genus, give it a very strange and curious appearance. It is to be found among its food plant attached by the anal segment. Mr. C. G. Barrett writes :—"The pupæ of *A. acanthodactylus* are to be found attached by the tail to the flower spike of the *Stachys*, between two of the seed-vessels, where they look like dried up flowers" ("Entomologist's Monthly Magazine," Vol. XIV., p. 159).

Time of Appearance, &c.—The imago of this species is to be found in May, and these are undoubtedly hybernated specimens. At Deal the insect is again common in July and the beginning of August, and again in September, so that the insect is double-brooded, the later brood hybernating in the imago state. With regard to this point Mr. Nelson M. Richardson writes : –" Some eggs were laid by a (hybernated) ♀ *acanthodactyla* on June 17th, 1888, and I bred *acanthodactyla* on August 10th. I suppose these would represent the first brood, but could not, of course be sure that the ♀ taken on June 17th, had hybernated" (*in litt*). Mr. C. G. Barrett also writes :—"*A. acanthodactyla* is certainly double-brooded, the second brood emerging in October and hybernating. I have reared them in that month." (*in litt*).

HABITAT—The species is common on sunny banks and the lower slopes of downs . I have found it on banks and in the more open parts of woods where its food-plant occurs. I have taken it in several localities in Kent and the Isle of Wight, and it is locally abundant in the Lake District. It is, however, rare at Huddersfield. Mr. Porritt writes :—" *P. acanthodactylus*, too, though a rare species here, I have never seen except among ling. Its best known food plants are *Ononis arvensis* and *Stachys sylvatica* both of which are common in many places, and although we have a little of the former, and the latter in abundance, I have never seen a specimen of the moth about either plant. It occurs in woods having an undergrowth of ling, but still quite away from the two well known plants " (" Entomologist's Monthly Magazine," Vol. XXI., p. 208). Dr. Jordan writes :—" I must in some years have seen fifty specimens in an afternoon on *Ononis*, near the Warren at Dawlish, and all of them with a rich reddish hue on the fore wings, utterly different from the almost greenish tint of *cosmodactyla* " (" Entomologist's Monthly Magazine," Vol. XVIII., p. 117); whilst in the same Vol. p. 212, the Rev. H. Williams writes :—" *Acanthodactylus* is very common in this county (Norfolk)." At Gareloch-head it is not uncommon in July, and hybernated specimens in May and early in June. Mrs. Hutchinson tells me that it occurs rarely near Leominster among *Ononis*. In Aberdeenshire, (Bennachie), Mr. Reid reports it as occurring rarely in June. It is abundant along the southern coast, wherever it has been worked (Sussex, Hants, Dorsetshire, &c.). Of Welsh localities, I have only one record, that of Mr. Nelson Richardson, who used to take the species in Cardiganshire. It is common on the Continent of Europe, but is unknown in America."

A. punctidactyla, Haw.—This species, which has been for some years considered identical with the *cosmodactyla* of Hübner, has lately produced some discussion owing to the attempts which have been made to sink it as a variety of *acanthodactyla*.

SYNONYMY—*Punctidactyla*, Haw., 479 ; Stephs. Ill., IV. 376 ; Wood, 1648 ; Tutt, Ent. Record, I., 93. *Cosmodactyla*, var. *Stachydalis*, Frey, Stett. Zeit., p. 125 (1875). *Cosmodactyla*, Treit. IX., 2, 235 (?),

H. S., 4, V., p. 369 (?); Frey, 406 (?); *Ulodactyla*, Zett. Ins. Lap., 1012. *Cosmodactyla*, Hb. 35, 36 (?).

It appears next to impossible to rely on the synonymy of this species, as it is so very doubtful whether Hübner's *cosmodactyla* has anything to do with Haworth's *punctidactyla*, and hence the difficulty of unravelling what species the respective authors refer to. In the "Entomologist's Record," Vol. I., p. 93, I wrote:—"Of late years this has been treated as synonymous with Hübner's *cosmodactyla*, but, in my opinion, erroneously. Wocke, of course, dropped Haworth's name as a synonym of Hübner's. The two great characters of our *punctidactyla* are:—(1) The green colour of the wings; (2) The falcate apices of the anterior wings. I have carefully studied Hübner's *cosmodactyla* (Figs. 35 and 36), which are without the characteristic colour, and appear to represent a much more stumpy species even than *acanthodactyla*. How anyone can make Hübner's figure satisfy Haworth's description (*vide* below) is beyond my comprehension!" So far as I have been able to discover, *punctidactyla* has never been found off *Stachys sylvatica* in Britain, whilst the Continental *cosmodactyla* has been bred from seeds of *Aquilegia*, *Geranium*, &c., and when Professor Frey bred our form from *Stachys sylvatica*, the specimens were so different from ordinary *cosmodactyla*, and yet so constant, *inter se*, that he called them var. *stachydalis;* his only reason for keeping it as a var. of the Continental *cosmodactyla* being, that he had once bred a similar example from *Aquilegia*. This is not at all striking, even if *cosmodactyla* (the *Aquilegia*-feeding species) be considered distinct from *punctidactyla* (the *Stachys*-feeding species), for all closely allied species have, occasionally, similar forms in parallel ranges of variation. Mr. Stainton says that *punctidactyla*, Haw. = *cosmodactyla*, Frey and Staud., but judiciously leaves out Hübner's name.

IMAGO—This species has the anterior wings divided into two lobes, with the apex much produced; the colour, olivaceous-grey, with the markings much as in the last species. The posterior wings are divided into three plumules, dark grey in colour, and with a tuft of black scales on the inner margin of the third plumule. Haworth's diagnosis ("Lepidoptera Britannica," p. 479) is as follows:—"*Alucita*, Alis anticis virescenti-cinereis albido nebulosis, punctis costalibus numerosis, strigaque postica obsoleta, albis." "Alæ anticæ bifidæ, posticæ tripartitæ atræ," whilst in Stainton's "Manual" p. 441, we find:—"Allied to the preceding *(acanthodactylus)*, but the ground colour of the fore wings olivaceous."

VARIATION—This species does not seem to vary. All writers appear to agree in considering it a most constant species. In the "Entomologists' Monthly Magazine," Vol. XVIII., p. 117, *cosmodactylus* is described as very common and very variable in America; but it is questionable whether this is identical with our British *punctidactyla.*

LARVA—The larva is thus described by Mr. Porritt:—"Length about half-an-inch, and of the usual stumpy form when at rest. Head small, and narrower than the second segment; it has the lobes rounded, and is highly polished; body cylindrical, attenuated a little posteriorly, each segment plump and distinct, making the divisions clearly defined; skin soft, and sparingly clothed with short hairs. In colour there are two very distinct varieties. In var. 1 (which, judging from the larvæ sent me, is the rather commoner form) the ground colour is a clear purplish-pink; head very dark sienna-brown, almost black; the smoke-coloured dorsal vessel shows through as the dorsal stripe; sub-dorsal stripes clear white, and very conspicuous; below them is a narrow and interrupted white line, and another about the same width - but being tipped with pink is not so pale - along the spiraeles; hairs white. Ventral surface semi-translucent, yellowish-grey; pro-legs purplish-pink on the outside; anterior legs of the dark sienna-brown colour of the head, but with paler rings. In var. 2 the ground colour is bright pale green, the markings same as in var. 1, except that the white stripes are scarcely so conspicuous; in some specimens the smoky medio-dorsal vessel is tinged with pink; the ventral surface and the pro-legs are of the same bright green as the dorsal area. Some of the larvæ were intermediate between these varieties ("Entomologist's Monthly Magazine," Vol. XXII., p. 150). These descriptions were made from larvæ obtained by Mr. Eustace Bankes of Corfe Castle, on *Stachys sylvatica*, in 1884 and 1885.

Comparing the larvæ of *punctidactyla* with that of *acanthodactyla*, Mr. Porritt writes:—"It will be noted that the chief points of distinction (distinctions which will probably be found reliable) are the deep purple ground colour in *acanthodactylus* as compared with the purplish-pink of *punctidactyius*; the white sub-dorsal lines being less conspicuous in *acanthodactylus*, and the head being yellowish-brown, marked with black, in place of the very dark sienna-brown, almost black, in *punctidactylus*" ("Entomologist's Monthly Magazine," Vol. XXIII., p. 133). The food plants on the Continent are given as *Aquilegia* and *Geranium* for *cosmodactyla*, but it is, as I have just previously pointed out, very uncertain whether the *Aquilegia*-feeding plume is the same as our *Stachys*-feeding one.

Pupa—Mr. Porritt did not fully describe the pupa, but gives the following general information:—"The pupa is attached to the food plamt by the tail, and two somewhat curved, pointed protuberances, which spring from the back, give it a curious appearance. As in the larva, there are two distinct varieties—a purple and a green form—each having oblique dark markings" ("Entomologist's Monthly Magazine," Vol. XXII., p. 150).

Time of Appearance—This species would appear to be on the wing at about the same time as the last species. Fresh specimens are captured in July, and again in September; and, although I know of no actual case of the species having been captured after hybernation, Mr. Nelson Richardson writes:—"I believe *punctidactylus* is double-brooded. I used to take fresh-looking specimens in Cardiganshire in September, and I believe that there is also an early brood" *(in litt.)*. In the "Entomologist's Monthly Magazine," Vol. XXII., p. 149, Mr. Porritt writes:—"In the middle of September, Mr. Richardson forwarded to me, alive, two fine females of *cosmodactyla*, which he had beaten out of furze bushes at Aberayron, in Cardiganshire, with the information that he almost always took the ♀ in the autumn, in such circumstances, and he had no doubt they hibernated in the bushes, and deposited their eggs in spring or early summer."

Habitat—This species is local, and comparatively rare. It occurs at Corfe Castle and Wareham, but rarely. Mrs. Hutchinson also states that the larvæ are rarely found in August on *Stachys sylvatica*, at Leominster. The only Welsh locality I have, is Cardiganshire, where Mr. Nelson Richardson used regularly to obtain it. I know of no Scotch localities. The Rev. H. Williams writes:—"This plume I took some years ago, in the autumn, in the Clee Hill district of Shropshire, on the wing; and bred two specimens sent me by a friend, found in a different part of the same locality. The larvæ were feeding on *Stachys* *sylvatica*, and the pupa remained suspended to the spike on which the larvæ had fed. My friend has since taken and reared larvæ from the same plant in Dorsetshire, and these have produced *punctidactyla*. From this I judge that *A. punctidactyla* is often overlooked, and mistaken for *acanthodactyla*, and that it is worth while to examine more closely the plume larvæ feeding on this plant, with a view to clear, if possible, these two plumes from confusion. *Acanthodactylus* is common in this county (Norfolk), but I have never seen the other species here" ("Entomologist's Monthly Magazine," Vol. XVIII., pp. 212, 213). Mr. W. F. de V. Kane records it from Kerry, in Ireland *(in litt.)*.

(To be continued.)

Notes.

SUTHERLAND LEPIDOPTERA.—I had the good fortune to spend a fortnight in the extreme north of Sutherlandshire last autumn; but I am sorry to say that, like last year, the very bad weather I experienced made my holiday—entomologically—a failure. The weather was cold and disagreeable, and the moors so soft with the heavy rains that collecting was altogether unprofitable. I stayed a few days at a pretty little village called Strathy, bordering on the stormy Pentland Firth; but during my whole stay I only saw a few nice black specimens of *Larentia didymata*. This seemed to be the only insect on the wing. Two summers ago, in July, I spent some days with my people in this place, and the heather was literally swarming with insect life. *Cœnonympha davus* was a perfect nuisance, almost every step raising one or more specimens. *Noctua festiva*, *Agrotis porphyrea*, and other *Noctuæ*, could be seen in great profusion at the heather bloom, as many as half-a-dozen *porphyrea* sometimes being taken on one sprig of blossom. But the rarest species in this district which I took then was *Crambus ericellus*. I had occasion to visit the ruins of a house which belonged to our family in the olden times, and, curiously, in this secluded spot I saw this very rare species in great numbers. It was so plentiful that I could have taken hundreds of specimens. Of course, in August I was too late for this much-sought-after *Crambus*; but I hope, on some future occasion, to visit Sutherland at the proper season for this species, and fill a few boxes for my southern entomologist friends. After staying a few days at Strathy, I proceeded along the coast to that loveliest of Sutherland Straths—Strathnover; but the wet weather made collecting impossible. Driving along, the only insects to be seen were the wasps and bees, with an occasional Small Tortoiseshell butterfly flitting about the roadside thistles, which a blink of sunshine enticed from its retreat. This species seemed a little smaller than the usual southern type. From Bettyhill I travelled on to Tongue—one of the most beautiful spots in Scotland, and crossed the romantic Kyle of Tongue, rowed by the most intelligent and courteous of ferrymen, into Melness, where I spent a week with some relatives. Here I had no better luck, the heather and moss being constantly dripping with the rain. Having some friends staying in the heart of the great Reay forest, I drove up Loch Hope side, then through bonnie Strathmore to the head of Glen Gollie—one of the most inaccessable and lonely places in the Highlands. I stayed two days at Gobernuishgach, a very pretty place, with a terrible name. In Glen Gollie I saw a few *Cidaria testata* and *immanata*, but they were quite useless as cabinet specimens. *C. didymata* was here very common, the type being very pretty, and much darker than the southern form. I could see nothing else in the way of *Lepidoptera* in these regions. At dusk, Lord Manners came from the forest with a fine, large stag which he had stalked, and it was a picturesque sight to see the party returning, with the trophy strapped over the horse's back, and the stalwart keeper and ghillies in attendance. After two days' pleasant stay at Gober, I returned to Melness by way of Strathmore, and found the heather literally swarming with the larvæ of *Bombyx rubi*. All the way from Dun-dornadilla (the finest example of a round tower in Britain), past Ben Hope to Hope Lodge, the larvæ of this insect was to be seen plentifully. I collected a number of them, which I sent to Miss Prescott Decie, of Tenbury, and it would be interesting to know if that lady succeeded in rearing them, and if so, was the imago similar to the usual type? The larvæ of *Spilosoma fuliginosa* were also to be occasionally met with, and also a few of *Saturnia carpini* and *Bombyx quercus*, or *callunæ*, perhaps, would be more correct. Two species of coleoptera were to be met everywhere on the Sutherland roads—*Geotropus vernalis* and *Carabus violaceous*. They were constantly in evidence.

My experience of the last two autumns shows that insect collecting in Sutherland is unprofitable at the end of Augnst and in September.

June and July are certainly the best months, and should I visit the Reay country again on an entomological expedition, I shall certainly go in the middle of summer. This great county is almost unknown to entomologists, and should any of my brother disciples of the net venture to visit it next season, I can safely promise them "good sport," grand scenery, and a hearty welcome from the kind people of this romantic country.—John Mackay, Glasgow, 7th January, 1891.

A complete Life History.—The following sketch for a complete life history of a lepidopteron may be not uninteresting. The ordinary type of collections have a series of male and female, with a few undersides, a more or less number of varieties, and a few larvæ or pupæ accidentally picked up, Although it may be impossible for many of us to carry out the idea with a complete collection, yet I throw out the suggestion to those whose opportunities are limited, as a means of keeping touch with ther favourite amusement, of affording them endless interest, and at the same time their work must, of necessity, be of much scientific value :—

1. Typical male, upper side.
2. ,, ,, under ,,
3. ,, female, upper ,,
4. ,, ,, under ,,
5. Male at rest } On one food plant, or on any special
6. Female ,, } attraction affected by it.
7. Varieties—Darker } Or grouped with regard to geographical
Lighter } distribution.
Size }
Shape }
Abnormal—*i.e.*, hermaphrodite.
8. Ova, on one food plant, as deposited.
9. Parasites on ova, if any.
Hymenopterous. Cocoons.
Imagines { male.
female.
Dipterous. Coccoons.
Imagines { male.
female.
10. Larva, on another food plant, to shew the method of destruction special to the species.

11. Larva, at different ages { before hybernation.
after ,,

12. ,, to shew variation { ordinary.
special, *i.e.*, food.

13. Parasites on larvæ—
a. Hymenopterous. Cocoons.
Imagines { male.
female.
b. Dipterous. Cocoons.
Imagines { male.
female.
c. Hyperparasites. Cocoons.
Imagines { male.
female.

14. Larvæ, to shew any fungoid growths.
15. Pupæ.
16. ,, in situ.
17. Cocoon.
18. Pupæ, to shew fungoid growths.
19. Neuration—primary } denuded of scales.
secondary }
10. Microscopic slides shewing—
Ova.
Scales.
Any detail to shew affinities—*i.e.*, anal appendages.

This arrangement would, of course, be somewhat modified with different species. It will be noticed too that opportunity is afforded of showing the various food plants.—H. J. Turner, Hatcham, S.E.

Varieties of Vanessa urticæ.—I devote much time to breeding *Vanessa urticæ*, and have reared some very fine varieties. I have the spotless form, and several almost banded, one or two with abnormally large blue spots, and other aberrations.—E. Sabine, Erith.

Amebican and English Smerinthus.—I think your *Smerinthus populi* a very beautiful species. It somewhat resembles our *Modesta* in pattern, though *Modesta* is a very much larger insect, spreading often six inches. Unfortunately, it is one of our rarest *Smerinthus*. I have bred but a single example in twenty years' collecting. In Colorado a variety occurs called *Occidentalis*, which, in contrast to ours, is, I am told, the most abundant *Smerinthus* they have.—EMILY L. MORTON, Newburgh, New York.

VARIETY OF ARCTIA MENDICA.—My friend Mr. Gardner has bred a variety of this species—a male that appears to be intermediate between the Irish form, var. *rustica*, and that of the type. In the type the male is dark smoky-brown, in var. *rustica* it is pale cream colour (Dr. Staudinger calls it "colore albido.") Mr. Gardner's specimen is pale ochreous-grey. It was one of a series bred from eggs from Hartlepool parents; but none of the others showed any departure from the type, and the females are all very ordinary specimens.—JOHN E. ROBSON, Hartlepool.

C. BRUMATA.—Notwitstanding the cold weather we had in the first week in January, *C. brumata* was on the wing, as well as the winter Daddy-long-legs. The furze is already out in bloom.—C. W. DALE, Glanvilles Wootton, Dorset, 30th January, 1891.

LARENTIA MULTISTRIGARIA IN FEBRUARY.—I have taken 15 *Multistrigaria* since the 12th February. They are a banded form, and dark. Their capture will show how very early we are here.—E. ROPER-CURZON, Howth, 15th February, 1891.

Larvæ.

BOMBYX RUBI.—The fineness of the day on the first of February tempted me out for a ramble with my children, and one of them picked up a fine larva of *B. rubi*, sunning itself after hibernation. It was transferred to the shelf of the kitchen fireplace, and spun its cocoon on the 3rd and 4th, changing to a pupa on the 11th. Though it is easy to induce hibernated larvæ to spin their cocoons at once, and though the change to pupa always follows immediately, yet they do not appear to emerge earlier, but generally remain as pupæ until April or thereabouts. I have found several other larvæ subsequently.—JOHN E. ROBSON, Hartlepool.

NOTES FROM HOWTH.—After the late severe winter in England, a note on the state of things in this entomological paradise may not be without interest.

We have had but one slight fall of snow, which did not lie forty-eight hours, while for the last ten days there has been no frost at all. On the famous "Banks," the abundance of grass-feeding larvæ is extraordinary, never even in South Devon have I seen them so forward at this time of the year.

Xanthographa and *Anomala* are quite full fed; *lichenea* (very abundant this season) and *orbona* an inch long; and the larvæ in the woods are quite as advanced. The hibernating *Depressariæ* are beginning to show up on favourable evenings. Altogether the outlook for the coming season is most promising.—E. Roper-Curzon, Howth, 29th Jan., 1891.

Epunda lichenea.—The larva of *Epunda lichenea* feeds up ravenously indoors on groundsel, eating the buds and flowers. I have some already down. They are very common and well advanced this year.—Id., 10th February, 1891.

Stilbia anomala.—*Stilbia anomala* larvæ are not easy to feed away from the sea, and though they are full fed in February, they do not pupate until June, and during that period they must not be disturbed. They are a quiet, sluggish larva, and never exhibit any signs of cannibalism, but live in peace not only with their own species, but with other grass-feeding companions, such as *Zanthographa*, *Rurea*, &c. Id., 10th February, 1891.

Gnophos obscurata,—The larvæ of *Gnophos obscurata* feed on Wild Thyme, and are very difficult to rear. They only feed in the hot sun, and in confinement never seem to grow, except shorter! Few entomologists appear to meet with this larva; they perhaps fall into the mistake of looking for it in the evening, or after dark, whereas they should look for it in the morning. About 11 a.m. is the best time to find it, when the sun is bright and warm.—Id., 10th February, 1891.

Coleoptera.

GOSSIPING NOTES ON BRITISH COLEOPTERA.

BY G. A. LEWCOCK.

Demetrias, Bonelli.—Referring to the derivation of the word Demetrias, the Rev. W. F. Johnson suggests that the name of this genus might possibly be "derived from the goddess Demeter, called

Ceres by the Romans, whose name is simply Mother Earth, the being connected with corn and the like." This might well be so, and there is no reason why the name *Demeter* should not have been adopted instead of *Demetrias* or *Demetrius*, which are only different forms of the same name, and both derived from *Demeter* originally.

D. atricapillus, L.—"Very common and generally distributed" (G. C. Champion). This comprehensive remark may be applied to most of the districts recorded by contributors to these papers; Deal (G. E. Hall), Hastings (W. H. Bennett), Bath (Gillo), Liverpool (Wilding), Chester (Sharp), Peckham (Heasler), North London (Newbery), Shirley (W. Chaney), &c.

Dromius, Bonelli.—Greek, a runner. Eleven species are included in the genus in Sharp's Catalogue (2nd edit.) and also in Fowler and Matthews' Catalogue, 1883. Canon Fowler, however, in his work on Coleoptera of the British Islands, says that *D. longiceps* "differs so much from the other Dromii in general appearance, and also in the fact that the paraglossæ are united over the front of the lingua, forming a membranous run round that organ, that it almost seems to form the type of a new genus." Several of the species occur under bark, but nearly all may be found in the damp herbage of ditches, marshy places, and shore refuse. Likewise obtained by sweeping; in point of fact, one always finds a Dromius in the net after a good turn at low herbage. On many occasions I have swept *D. quadrimaculatus* and *D. meridionalis* in the Esher District, to say nothing of hundreds of the commoner species, *D. linearis*.

D. longiceps, Dej.—Not recorded by any correspondent. It is said to occur in marshes and fens, among reeds and sedges—both standing and cut. The districts given are Horning Fen, Holme Fen, Whittlesea Mere, and localities in the eastern fen district.

D. linearis.—Generally common and widely distributed; may be beaten out of hedges, swept in the net, and found among refuse. "Is not common at Bath" (R. Gillo). Ireland: "Occurs here sparingly in moss, and is also recorded from near Belfast" (Rev. W. F. Johnson, Armagh).

D. meridionalis, Dej.—Sometimes found by sweeping, but more often under bark. Occurs at Esher, in pine plantation, and may be found by removing the decayed bark; also at roots of fir trees; Rainham (Essex), four or five clustered together under loose bark; also taken at Farnham, Surrey, mostly among the larches. "Under bark, and generally distributed" (G. C. Champion, "Coleoptera of Kent and Surrey"). "Under oak bark, Lee, Lewisham, Greenwich Park (West, Greenwich). "Frequent under bark, especially of fir" (Dr. J. W. Ellis, "Liverpool Coleoptera"). "Under bark, but more plentifully in dry moss and lichens on tree trunks" (W. H. Bennett, Hastings). "I have only taken this species when hybernating, always singly, at roots of trees and under bark; Ledsham" (W. E. Sharp). "Under ash bark, at West Derby" (R. Wilding). "Common under bark, in hedge refuse, hay litter, &c., not many together, nor nearly so common as *D. linearis*" (T. W. Hall, Watford, Herts.). Ireland: "Quite rare here; I took mine under bark of willow. Also recorded from near Dublin and Belfast" (Rev. W. F. Johnson, Armagh).

D. agilis, F.—"Under bark; rare. Kent: Eltham, Blackheath, Greenhithe" (G. C. Champion, "Kent and Surrey Coleoptera") "Found under bark, between Waterloo and Crossby, by Mr. Kinder" (Dr. J. W. Ellis, "Liverpool Coleoptera"). "From King and Dunsmore, Scotland" (West, Greenwich). "Under ash bark, West Derby" (R. Wilding). "Taken under bark near Crossby" (W. E. Sharp). "Received from Huddersfield" (R. Gillo). Ireland: "Recorded from Dublin" (Rev. W. F. Johnson, Armagh).

D. quadrimaculatus, L.—Under bark, sometimes in clusters: obtained by sweeping sides of ditches; and also comes to the sugar patches at night. I have found the species at Wimbledon, Esher, Farnham, Surbiton, &c. "Under bark; common everywhere" (G. C. Champion, "Kent and Surrey Coleoptera"). "Common under bark of oak, in Eastham Wood, and occasionally elsewhere" (Dr. J. W. Ellis, "Liverpool Coleoptera"). "Under bark of many trees, and generally distributed" (R. Wilding). "Abundant in winter, hybernating (always gregarously) at roots of trees. I have often taken this species at sugar" (W. E. Sharp, Ledsham). "Under bark, and by sweeping about Bath on several occasions, but does not seem to be common" (R. Gillo). "Common under bark, in hedge refuse, hay litter, &c., generally in small companies" (T. W. Hall, Watford, Herts.). "Under bark, but more plentifully in dry moss and lichens on tree trunks" (W. H. Bennett, Hastings). "Common in Hadley Woods, in moss and under bark" (H. Heasler). Ireland: "Not common here; beaten out of hawthorn bloom; also obtained by sweeping. Recorded also as occurring near Belfast" (Rev. W. F. Johnson, Armagh).

Notes.

Cicones variegatus, Hellw.—Mr. E. G. Elliman captured several specimens of this uncommon beetle under the bark of a birch tree, at Tring, Herts., on January 31st.—G. A. Lewcocr.

Atemeles paradoxus, Grav.—The Rev. J. Isabell has kindly sent me a nice specimen of this rare species, which he has been fortunate in capturing in the Penzance district. He writes me that he "secured one as late as November 21st last, in nest of enclosed ant" (probably *Formica flava*). This beetle is rather darker than its congener, *A. emarginata*, from which it differs in having the third joint of antennæ much longer than the second, the frontal furrow very distinct, and there is also a great difference in the shape of the anterior angles of thorax.—G. A. Lewcock.

Ocypus fuscatus, Grav.—Several specimens of this good beetle have recently been taken by the Rev. J. Isabell, near Penzance. It appears to be fairly numerous in the district.—G. A. Lewcock, 73, Oxford Road, Islington.

Dinarda Maerkelii, Kies.—I have ten specimens of this insect. All were taken last summer: seven in one ant's nest, and the others singly.—Rev. J. Isabell, Penzance.

Reports of Societies.

ENTOMOLOGICAL SOCIETY OF LONDON.

February 4th, 1891.—Mr. Frederick DuCane Godman, M.A., F.R.S., President, in the chair.

The President nominated the Rt. Hon. Lord Walsingham, M.A., F.R.S., Professor Raphael Meldola, F.R.S., and Dr. David Sharp, F.R.S., Vice-Presidents for the Session 1891-92.

Dr. Thomas A. Chapman, M.D., of "Firbank," Hereford; Mr. Horace St. John Donisthorpe, of "Belvedere," Crystal Palace Park Road, S.E,; Mr. F. W. Frohawk, of 9, Dornton Road, Balham, S.E.; Mr. E. Ernest Green, of 10, Observatory Gardens, W.; Mr. G. F. Hampson, B.A., of Thurnham Court, Maidstone; Mr. Frederick J. Hanbury, F.L.S., of 69, Clapton Common, Upper Clapton, N.E.;

and Hon. M. Cordelia E. Leigh, of Stoneleigh Abbey, Kenilworth, were elected Fellows of the Society.

Mr. C. J. Gahan called attention to a larva which he had exhibited at the meeting of the Society on the 1st of October last, when some doubt was expressed as to its affinities. He said that Professor Riley had since suggested that the larva was that of a dipterous insect of the family *Blepharoceridæ* ; he was quite of the same opinion, and thought it might probably be referred to *Hammatorrhina bella*, Löw, a species from Ceylon.

Mr. Tutt exhibited a long series of *Agrotis pyrophila*, taken last year by Mr. Reid near Pitcaple, in Aberdeenshire, and remarked that this species had been commoner than usual last year in Scotland, the Isle of Portland, and the Isle of Man. He also exhibited long and variable series of *Melitæa artemis*, *Triphæna orbona*, *Abraxas grossulariata*, and *Melanippe fluctuata*, all from the same locality in Aberdeenshire.

The Rev. Canon Fowler exhibited a cocoon of *Deiopeia pulchella*, received from Lower Burmah.

Mr. C. O. Waterhouse exhibited specimens of *Scyphophorus interstitialis*, a Mexican species, and *Aceraius comptoni*, a Ceylon species, recently taken by Mr. Bowring in the greenhouse. He also exhibited, on behalf of Miss Emily Sharpe, a specimen of *Daphnis hypothous*, Cramer, a native of Borneo, Java, and Ceylon, caught some years ago at Crieff, N.B. The specimen had long been confused with *Chærocampa nerii*, uuder which name its capture was recorded in "The Entomologist," xiii. p. 162 (1880).

The Rev. Dr. Walker exhibited a collection including many species of Orthoptera and Scorpions recently received from Jerusalem.

Mr. Frederick Enock read an interesting paper entitled "The Life-History of the Hessian Fly." This paper was illustrated, by means of the oxy-hydrogen lantern, with a number of photographs of original drawings showing the fly in all its stages and transformations. Mr. G. H. Verrall said he believed the Hessian Fly was no more recent introduction into this country than the Cabbage White Butterflies. The discussion was continued by Mr. Godman, Mr. Enock, and others.

Mr. Roland Trimen communicaten a paper entitled "On some recent Additions the List of South African Butterflies."

Mr. H. W. Bates communicated a paper entitled "Additions to the Carabideous Fauna of Mexico, with remarks on species previously recorded."

Mr. F. Kirby read a paper entitled "Notes on the genus *Xanthospilopteryx*, Wallgr."

Dr. Dr. Sharp contributed a paper entitled "On the Rhyncophorous Coleoptera of Japan," Pt. 2.—H. Goss and W. W. Fowler, *Hon. Secretaries.*

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

February 5th, 1891. J. A. Clark, President, in the chair. Exhibits;—Mr. Hodges, *Acronycta rumicis*, and var. *salicis*. *Leucania vitellina* from the Isle of Wight, *Emmelesia tæniata*, and specimens of *Anchocelis lunosa* and *Miana strigilis*, showing the range of variation. Mr. Battley, series of "carpet" moths ; fine varieties of *Crocallis elinguaria Cidaria populata*, *Arctia menthastri*, and *Noctua festiva*. Mr. Tutt, long series of "carpets" to illustrate his paper. Mr. Milton, *Heliophobus hispidus*, *Noctua glareosa*. Coleoptera :— Mr. Elliman, *Mycetophagus atomarius*, *Litargus bifasciatue*, *Cicone. variegatus*, *Dromius quadrinotatus*, *Sunius angustatus*, *Rhizophagus bipustulatus*, and other beetles. Mr. Milton exhibited *Nacerdes melanura*, *Alphitobius piceus*, *Carabus nitens*, *Calosoma inquisitor*, and *Panagæus crux-major.*

The Geometrid Genera Melanthia, Melanippe and their Allies,—Mr. Tutt said that he had chosen the geometrid genera of "carpet" moths because they exhibited, perhaps better than any other group, changes which were now in progress. It was generally accepted by scientific men that transverse bands on the wings of lepidoptera had been formed by the union of transverse lines, and that many species exhibited incomplete bands, the incomplete part being formed of wavy lines. Attention was drawn to the fact that the moths of these genera rested with outspread wings on the rocks, tree-trunks, palings, etc.; and that, taking into consideration the probability of a more humid climate in the British Isles when they were more covered with wood, there was the consequent certainty of a natural darkening in colour of species with such habits; it may be safely assumed that the darker specimens with transverse lines represent an older form, and that, therefore, the *Larentia* was propably one of the oldest genera in this group. As types of the changes that may have occurred, *Melanthia rubiginata*, *Melanippe montanata*, *M. fluctuata*, and *Camptogramma bilineata* were dealt with at length. All these had, in one or other of the humid districts to the north or west of the British Isles, a form with dark ground colour crossed by transverse lines, the ground colour becoming whiter and the transverse lines coalescing into banded form as more open, drier, southern or eastern localities are reached. In the north and west of Scotland, and in some parts of Ireland, the prevailing form of *M. fluctuata* is dark grey in colour, with transverse lines, the central area often being without the slightest tendency for the transverse lines to assume a banded form; but as we come south the ground colour becomes paler in some localities, and, at the same time the central band necessarily becomes more marked until in the seuth of England and on many parts of the Continent, the ground colour has become white, and the central band partly disappears, often forming only a small dark blotch on the costa, or being entirely absent. Occasionly dark specimens and completely banded forms are captured, but these must be looked upon as simply reversions to the darker form. *M. montanata*, taking the Hebridean and Shetlandic forms as nearest to the type, shows a similar development, but the manner of suppression of the central area of the band shows most clearly in a long series from various localities. The special development relative to *M. rubiginata* was also entered into; a comparison of the Lancashire and south coast forms of *M. galiata* was made, and the darker ground colour and central band of the former noted. *C. bilineata* has a dark ground colour and is crossed by dark transverse lines in the majority of Shetland specimens; Scotch specimens also tended to be dark in many localities; as we got father east and south there was a greater tendency for both sexes to become golden, yet in many southern localities, and in some years more than others, a large percentage showed reversion, by developing a dark central band, more or less complete. These dark specimens in the south were nearly always females, and hence this threw a side-light on sexual dimorphism in this group. Mr. Tutt suggested that it was quite open to assume that the paler forms were older although he did not think it possible), when the dark specimens would have to be looked on as instances of progressive development, instead of, as he had done, looking upon the dark forms as older, and the gradual extinction of transverse lines and bands, and change of ground colour, as so many steps in the line of progressive development.

Dr. Buckell remarked on *M. ocellata*, *Coremia ferrugata*, *C. unidentaria*, *C. propugnata* and *C. munitata*, whilst Messrs. Clark, Milton, and Battley took part in the discussion which followed; and a vote of thanks was accorded to Mr. Tutt for his paper. An interesting discussion also took place respecting the effect of the recent severe frost on aquatic coleoptera and fish. Mr. Milton stated that he had found large numbers of dead beetles in the shallow pools at Clapton; but in the deeper ponds they appeared to have survived. Several members had observed dead fish floating on ponds and lakes, the oxygen in the water having apparently become exhausted.—

Thursday, 19*th February*, 1891. Mr. J. A. Clark, President, in the chair. Exhibits: —Mr. Clark, *Noctua conflua*, bred from the ova, larvæ of *Cossus ligniperda*, showing the pale form usually obtained in the spring; also a photograph of a white frog. Mr. Battley, varieties of *Chelonia caja*. Mr. Milton, *Xanthia silago*, *Cidaria immanata* *Pyrausta punicealis* and *Botys flavalis*; also the following Coleoptera: *Phœophslus Edwardsii*, *Zeugophora flavicollis*, *Trachyphlœus spinimanus* and *Melandria caraboides*.

Mr. Heasler, *Cicones variegatus* (taken under beech bark), *Megacronus inclinans*, *Agathidium varians*, *Bembidium mannerheimi*, *Tachinus subterraneus*, *Coryphium angusticollis*, &c., all from Loughton.

Mr. Battley said that he had been to Richmond Park, and taken *A. leucophæaria* *H. defoliaria*, *C. brumata*, *P. pilosaria*, and one specimen of *N. hispidaria*. He also drew the members attention to the new part of Epping Forest (Higham Park) which had just then been thrown open to the public.

Mr. Milton had been to Richmond and Enfield, and taken several of the spring insects. He remarked that specimens *H. defoliaria* were still to be obtained in good condition, their emergence having probably been retarded by the long frost.

The Secretary read a paper by Mr. J. E. Robson on *Abraxas pantaria*, in which he expressed his opinion that this species, *Abraxas ulmata*, *A. leopardina*, and many other Asiatic forms, were but varieties of one species. To prove this, he minutely described the markings of *A. ulmata*, as compared with *A. pantaria*, and showed that the same markings and colours were present in both species, but that in *A. pantaria* they were less pronounced both in size and colour, but that even in the var. *Cataria*, which had scarcely any markings the peculiarities could still be observed. The paper was illustrated by various specimens from different countries.

In the discussion which followed, Messrs. Clark and Boden stated that they had formerly taken *A. ulmata* near Croydon. A vote of thanks, proposed by Mr. Hodges, and seconded by Mr. Smith was unanimously accorded to Mr. Robson for his kindness in sending the paper.—G. LEWCOCK and A. U. BATLEY, *Hon. Secretaries*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

January 22nd, 1891. W. H. Tugwell, Esq., Vice-President, in the chair.—Mr. J. C. Dacie, of Putney, was elected a member. Mr. South exhibited specimens of what he thought to be a new species of *Miana*, the examples which had been until lately in his cabinet as *M. strigilis*, were taken with others in North Devon. Mr. South read notes relative to his exhibit. Mr. Tugwell remarked that an examination of a larger number of specimens would be necessary before coming to any conclusion as to whether those now shown were a new species or only strongly divergent forms of *M. Strigilis.* Mr. J. A. Clark, a variety of *Arctia caia* in which almost all the white of the superior wings was replaced by brown colour. Mr. Short, specimens of *Polyommatus phlæas*, approching variety *schmidtii*, Gerbs. Mr. Tugwell, *Hepialus velleda*, from Paisley showing considerable variation in colour and size. It was mentioned that this species occured at Darenth Wood, and Folkstone, Kent, and at Sutton, and Box Hill, Surrey. Mr. Tutt's specimens of *Miana*, received from Ireland and and which he contended are intermediate between *M. strigilis* and *M. fasciuncula.*

The treasurer submitted his balance sheet, showing a balance to the Society's credit of £71 17s. 9d. The Secretary read the Council's Report for 1890, from which it appeared that 32 members had been elected during the year, making a total membership 232. The election of officers was next proceeded with and resulted as follows:—Mr. W. H. Tugwell, President; Mr. J. James Weir, F.L.S., &c., Vice-President; Mr. C. Step, Hon. Treasurer; Mr. West, Hon. Curator; Mr. D. J. Rice, Hon. Librarian; Mr. H. W. Barker and Mr. D. J. Rice, Hon. Secretaries; Messrs. R. Adkin, F.E.S., T. R. Billups, F.E.S., C. A. Briggs, F.E.S., J. T. Carrington, F.L.S., C. Fenn, F.E.S., R. South, F.E.S., and J. W. Tutt, F.E.S., Council. The Meeting closed with votes of thanks to the various Officers.

12*th February*, 1891.—W. H. Tugwell, Esq., President, in the chair. Mr. R. Adkin exhibited *Aplecta occulta*, bred during November and December last from one received from Forres in the previous August. The specimens were all of a light form, the pink shade in the primaries being strongly produced in many of them. Mr. Tugwell said there was a darker shade of colour in the specimens shewn than those obtained in the south. Mr. Tugwell exhibited *Melanippe hastata*, from Sussex and the Shetlands, to show the desirability of obtaining insects from various localities. Mr. Nussey bred specimens of *Thecla pruni*, and called attention to a large specimen of the ♀, which had emerged from the pupa without antennæ. Mr. McLachlan—*Polia chi*, dark forms of *Noctua xanthographa*, *Agrotis lucernea*, &c., all taken at Aberdeen. Mr. Farrant, a richly-coloured specimen of *Smerinthus tiliæ*, and an example of *Epinephele hyperanthes*, approaching the var. *arell.* Mr. Auld—a coloured drawing of a pale variety of *Abraxas grossulariata.* Mr. Billup—a number of miniature mollusca obtained from drift collected by Mr. C. G. Barrett on the Pembrokeshire coast, and read note relative thereto. Mr. T. D. A. Cockerell exhibited living slugs found by Mr. D. B. Cockerell at Acton and Bedford Park, Middlesex—*Amalia sowerbyi*, Térta (*carinata*, Leach), Acton; *A. gagates*, Subsp. *plumbea*, Moq., Acton; *Arion hortensis*, Fér.; and a w variety with colourless slime, Acton; *A. circumscriptus*, Johnst. (= *bourguignati*, Mab.,) Bedford Park; *Agrio-limax agreslis*, var. *sylvaticus*, Moq., Acton.—H. W. BARKER, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.

The Monthly Meeting was held on Monday, February 9th, the President—Mr. S. J. Capper, F.L.S., F.E.S.—in the chair. Mr. Brockton Timlin, of Chester, was proposed for membership. Mr. W. E. Sharp read a paper on "Variation and heredity: some recent speculations on their origin." The author explained the various hypothesis put forward by such men as Wallace, Darwin, and Le Mark, on the phenomena of variation, showing the points of difference in the theories of each, and fully discussing the subject of pangenesis as relating to hereditary variation. The President exhibited some fine varieties of *Bombyx rubi*; Mr. Gregson—a beautiful variety of *Sciaphila colquhounana*, bred from larva collected at Scarlet Rocks, Isle of Man, in 1889; Mr. R. Newstead—a specimen of the rare *Vanessa antiopa*, captured in Cheshire, 1872; Mr. Stott—varieties of British Lepidoptera; the Rev. H. H. Higgins—a drawer of African butterflies; and by Mr. Wilding—a series of *Silpha atrata*, var. *subrotundata*, from Ireland.—F. N. PIERCE, *Hon. Sec.*, 143 Smithdown Lane, Liverpool, 14th February, 1891.

Mollusca.

BIBLIOGRAPHY.

C. A. Westerlund. *Faun. Pal. Binn.* (continued from p. 21).

Many of the European fresh-water genera are so exceedingly polymorphic that there is, apparently, no end to the number of forms, called varieties or species, according to the views of the authors who write about them. While it cannot be denied that full information about all these is very desirable, it seems quite unnecessary to call them all species, after the manner of the Bourguignat school. Very much remains to be ascertained as to the permanence or otherwise of the various characters on which these so-called species are founded; but from what we know of the variability of fluviatile mollusca under different conditions, there is reason to believe that a very large proportion of the species of *Limnæa*, *Unio*, &c., described of late years, would not prove permanent if removed to new environment—that is to say, the supposed specific characters would not tend to be inherited. Of course, it will be argued that under circumstances of isolation and new environment, all species tend to change; but surely characters which are produced by circumstances during the lifetime of the individual can hardly be considered specific, unless evidence can be found to show that they are transmitted to the offspring. We should prefer to regard such species as *Limnæa stagnalis*, *Unio pictorum*, &c., as *potentially polymorphic*, that is, having a wide range of variability, the different phases of which are induced by environmental conditions. The ability to vary is inherited, and is, doubtless, of great value to the species, but circumstances determine *which* varietal characters of those possible shall appear in any particular individual.

Planorbis.—*P. lineatus* is referred to *P. nitidus*, Mull., and a var. *clessini*, Wst., is British. *P. nitidus* of Jeffreys is *P. complanatus*, L. (non Jeff.) *P. nautileus* and *crista* are given as distinct species, as also is *P. draparnaldi* (our *albus* var.) *P. spirorbis* of Jeffreys is called *P. leucostoma*, Mell., but *ecarinatus*, Jeff., is considered a variety of the true *spirorbis*, L. *P. dazuri*, Mörch., is given as British. *P. complanatus*, Jeff., is called *P. umbilicatus*, Mull., but according to strict priority, it should apparently stand as *Planorbis planorbis* (L.) *P. elophilus*, Bgt., v. *ammonoceras*, Wst., is British; we should consider it a variety of *corneus*.

Physa.—*P. fontinalis*, v. *inflata*, is v. *bulla*, Mull.

Limnæa.—*L. involuta*, *L. burnetti*, *L. ovata*, and *L. ampla*, are considered valid species. *L. auricularia*, v. *monnardi*, is a form of *ampla*, and Jeffreys' *acuta* is referred to *lagotis*, Schr. *L. stagnalis*, v. *elegans*, Leach, is described, and is, of course, British; the recently-described v. *elegans*, Wllms. ("Midl. Nat.," 1889, p. 164), will apparently require a new name. *L. truncatula*, v. *turrita*, Cl., is quoted as British.

Ancylus.—Our vars. *capuloides* and *strictus* of *A. fluviatilis* appear as species. The white var. of the same species is called v. *albus*, Stenz.

Paludina.—*P. vivipara*, var. *nevilli*, Bgt., and *P. subfasciata*, Bgt., are British.

Valvata.—*V. piscinalis*, var. *pusilla*, appears as a species. *V. fluviatilis*, Colb., is said to be English. According to Locard, *Valvata gallica*, Loc., is found in England, but we call it merely *piscinalis*.

Sphærium.—*S. corneum*, v. *flavescens*, is referred to *nucleus*. *S. scaldianum* appears as a species, with *pisidioides*, Gray, as a variety. Two sub-species of *S. rivicola* are found in Britain; *S. loiræ*, Bgt., and *S. gallicum*, Bgt., both near Manchester. Our *S. ovale* is called *S. pallidum*, Gray, a species distinct from true *ovale*. *S. lacustre*, v. *mamillare*, Gass., is British; and vars. *brochonianum* and *ryckholtii* are placed as species.

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EXCHANGE.

Exchange—I have a quantity of Ova *Orgyia antiquæ* which I shall be happy to send to send to any applicant.—John E. Robson, Hartlepool.

Duplicates.—American Lipidoptera and Coleoptera. Desiderata British or Exotic Bombycidæ and Sphingidæ.—Miss Emily Morton, Newburg, New York. New Windsor Delivery, U.S.A.

Exchange.—I should be glad to exchange rare vars. of H. nemoralis and hortensis with anyone who has paid special attention to these shells.—Rev. J. W. Horsley, Holy Trinity Vicarage, Woolwich.

Duplicates.—Fine Hyale, Latona, Acis Arion, Galatea (dark), Phlœas (dark), Virgaurea (all Swiss), Sybilla (British). Desiderata—Many Eupitheciæ and Noctuæ in fine condition.—T. Maddison, South Bailey, Durham.

Duplicates.—*Petasites*, *Phragmitides*. Desiderata.—Genus *Boarmia*, *Tephrosia*, *Acidalia*, *Eupithecia*, and many others. Please send list of Duplicates.—Joseph Collins, Lilford-st, Warrington.

Duplicates.—Boreata, Monacha, and others. Desiderata.—many common species to renew.—A. E. Hall, Norbury, Sheffield.

I have Vol. I of Ent. Weekly Intelligences in duplicate, it is in good condition and will exchange it for well got Lepidoptera. I would be glad to purchase or otherwise Entomologist Part 100, Vols. 2-5, and Ent. Annual for the years 1866-68 or 70 to end —A. E. Hall, Norbury, Sheffield.

American Lepidoptera. cocoons and crysalides of same. American Birds' eggs, Indian relics snd fossils for Exotic Lepidoptera other than European. South American, African and Australian especially desired.—L. W. Mengall, Reading, Pa., U.S.A.

Duplicates.—Fine bred specimens Turionana, Maritimana, Udana, Alpinana, Udana, Simpliciana, Badiana, Tanacetana, Atricapitana, Zephyrana, Francillana, Derasana, Lepiastriana, Euphorbiana, Allisella, Conspicuella, Raskiella, Cricella, Alpella, Hepariella, Rhamniella, Schiffermillerella, Horridella, Hippophælla. Vilella, Eximia, Stettinella, Lantella, &c., lists exchanged.—G. Elisha, 122, Shepherdess Walk, City Road, N.

Duplicates.—Ulmata, Tristata, Rurea, Chrysitis, Arcuosa, Affinitata, Decolorata, Neustria and ova. Desiderata very numerous.—W. Brooks, The Gardens, Grange Hall, Rotherham.

Duplicates.—Davus, Tithonus, Blandina, Ulmata, Bipunctaria, Carpophaga, Farinalis, Bisetata. Desiderata. Many common species, pupæ preferred. — John E. Robson, Hartlepool.

Duplicates—Fulva, Fasciuncula, Furuncula, Arcuosa, Aprilina, Protea, Multistrigaria Albulata, Lariciata, Ocellata, Immanata, Cembræ, Lutealis, Trigonodactylus.—A. Adie Dalglish, 21 Princes st., Pollockshields, Glasgow.

Duplicates—Shells. S. corneum, A. anatina, N. fluviatilis, B. tenticulata, B. leachii, V. pscinalis, V. cristata, P. nitidus, P. vortex, P. contortus, P. hypnorum, P. fontinalis, L. glutinosa, L. truncatula, A. lacustris, S. putris, S. elegans, H. hortensis, H. arbustorum, H. cantiana, H. virgata, H. caperata, H, ericetorum, C. rugosa, &c. Desiderata—Other Shells or Natural History Spceimens—J. W. Boult, 17 Finsbury Grove, Fountain rd, Hull.

Duplicates.—Female Templi alive. Desiderata—Iris, Lineola, Galii, Bombyliformis, A. urticæ, Cænosa, Fagi, Auricoma, depuncta, pyralina, Cordigera, Flexula, Fluviata, Versicolor, Sicula, Contiguaria, &c.—J. Harrison, 7 Gawber road, Barnsley.

To Correspondents—Conchological Section. All communications for this section should be sent Mr. T. D. A. Cockerell. 3, Fairfax Road, Bedford Park, London, W., who will also name specimens and answer enquiries for any subscriber. Mr. G. A. Lewcock, 73, Oxford Road, Islington, N., Hon. Sec. City of London Ento. and Nat. Hist. Society, represents the Magazine in London, and conducts the section of Coleoptera. New subscribers can have such portions of the Supplements as appeared last year as follows: The British Hawk Moths, 24 pages, 6d; Hand-Book of British Spiders, 32 pages, 3 plates, 1s.; British Pterophori, 24 pages, 6d. Subscriptions, and all communications other than as above, to be sent to John E. Robson, Hartlepool.

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THE

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Pisidium.—These unfortunate little bivalves are much misunderstood in this country, if Dr. Westerlund is correct. *P. fontinale*, Drap., is a synonym of *P. pusillum;* but we may use the name as before, writing *P. fontinale*, C. Pfr. (non Drap.) Clessin's *fossarinum* is said to be *fontinale:* but *cinereum*, Alder, is a variety of *P. casertanum*, Poli, of which *sinuatum* is a monstrosity. *P. henslowanum*, *P. pulchellum*, *P. pallidum*, and *P. obtusale*, are all regarded as species. *P. pusillum*, v. *ventrosum*, is referred to *P. scholtzi*, Cless., var. *trigonatum*, Wst. *P. pusillum* of Jeffreys is said to be *P. globulare*, Cl.; but the genuine *pusillum* is considered also British. *P. roseum* of Jeffreys is not Scholtz's species of that name, but is *P. milium*, Held. *P. recluzianum*, Bourg., is a very doubtful species supposed to occur in Ireland.

Unio.—The Linnean *pictorum* is perhaps a form of *tumidus*, and so our species of that name is called *U. rostratus*, Lam. *U. sinuatus*, Lam., is referred to *U. auricularius*, Spengler. Locard is quoted on *Margaritana elongata*, Lam., which is British, but it is only a form of *U. margaritifer*. *U. arcuatus*, Bouch., is *U. bouchardi*, Bgt.

Anodonta.—The following so-called species are British:—*A. browni*, Bgt. (Northumberland, founded on a figure of Brown's); *A. fuscata*, Fér. (not described); *A. gallica*, Bgt. (= Brown's *cellensis*); *A. maculata*, Shepp.; *A. racketti*, Bgt. (= Brown's *ponderosa* var., "Ill. Conch. Brit.," 1845, pl. 15, f. 1); *A. fallax*, Colb. (= *anatinus* var., f. 4, Mat. and Rack., Linn. Tr., 1807); *A. dentata*, Turton (probably an abnormal *cygnæa*); *A. paludosa*, Gray (a *cygnæa*-form); and *A. dupuyi*, Ray and Drt. In addition to these, the following forms—considered by us as varietal only, which have been recorded from Britain—are given as species:—*A. radiata*, Mull. (sp. dub.); *A. incrassata*, Shepp. sp. dub.); *A. rostrata*, Kok.; *A. stagnalis*, Sby.; *A. sturmi*, Bgt. (= *intermedia*); *A. avonica*, Bgt. (= *avonensis*); *A. subrhombea*, Brown (sp. dub.); *A. contorta*, Br. (sp. dub.); *A. cellensis*, Gmel.; *A. ventricosa*, C. Pfr.; *A. arelatensis*, Dup.; *A. pictetiana*, Mort.; *A. rayii*, Dup.; *A. scaldiana*, Dup.; *A. milleti*, R. and D.; and *A. minima*, Mill. Whether all of these are really found in this country is perhaps open to question. Our *anatina*, vars. *complanata* and *normandi*, are both considered valid species, and placed in the sub-genus *Pseudanodonta*, Bgt. It should be mentioned that Dr. Westerlund gives two species as *A. rayi*, and the *rayi* (Mab.,) Bgt., ought, therefore, to have a new name—that is if either or both are to be considered true species. Similarly, *Limnæa* *peregra*, v. *decollata* (Anders.,) Wst., 1881, will want a name, and may be changed to *subdecollata*, as there is a prior *decollata*, Jeffreys, which is not identical with it.—T.D.A.C.

Notes.

Mr. E. A. Smith read a very interesting paper at the Annual Meeting of the Conchological Society, on the generic names of some British shells. On the grounds of priority, he considers that we should write *Viviparus* instead of *Paludina*, *Vitrea* for *Hyalinia*, and *Acicula* for *Acme*. The paper is briefly reported in an account of the meeting in the "Yorkshire Weekly Post" of Jan. 31st.

Mr. J. Wilcock writes that he will shortly be able to make large additions to the list of British Unionidæ,

Mr. A. J. Jenkins writes us concerning *Physa acuta*:—"Mr. Rae and myself have every reason to believe that the species has been living and thriving in the warm water of the Banner Mill Ponds, Aberdeen, for at least 15 years; the mill foreman is positive that the species was existing in these ponds when he first came to the mill—15 years back. Adult live shells of *P. acuta* from this locality are frequently quite white, the body whorl being much expanded, and the outer lip reflected."

The last point is specially interesting, because Regelsperger, in 1885, noticed deformities in the aperture of *Physa acuta* living in a warm chalybeate spring.

At the Annual Meeting of the Conchological Society, Mr. C. S. Bell Cox read a paper on the occurrence of *Helix elegans*, Gmel., near Dover, where it has been introduced, and has formed quite a little colony. Mr. Horsley sent the writer a specimen from this locality; it referable to the form *hypozona*, Moq., but the brown banding below consists merely of sub-effaced brown lines.

Hydrobia jenkinsi, var. *tumida*, Jenkins, is described in "Sci. Goss." for Jan., p. 9. It is from near Beckton, Essex, not Tilbury Marshes, as was stated in "Journ. of Conch."

In the "Proceedings of the Geological Association" for Aug., 1890, Mr. B. B. Woodward has an interesting summary of the knowledge of the Pleistocene Mollusca of the London district. On p. 381 it is stated that *Planorbis glaber* is not *P. parvus*, Say., as Dr. Dall compared the types, and found *parvus* much flatter and less deeply umbilicated, showing much more of the whorls within the outer one, and also less polished. But we think that these supposed distinctions will scarcely hold good in a long series, and until more information is to hand, it will be best to call the European form *P. parvus*, var. *glaber* (Jeff.) Dr. Jeffreys, the author of *glaber*, considered it to be Say's *parvus*. On p. 378, *Sphærium corneum*, var. *mœanum* (Kobelt), is given as fossil at Crayford, having been identified by Dr. Boettger. It is living at the present day in Germany.

Mr. Ancey thinks we have two species of *Acme* in Britain. He writes (*in litt.*, Feb. 28)—"*Acme polita* (= *fusca*, Walk. and Boys) is *quite different* from the other species *A. lineata*. I saw English specimens of the latter, although I have none, but no *A. polita*. The latter I have from Germany, &c.; but I suppose that MM. Walker and Boys described their shell from British examples."—T.D.A.C.

Note on Helix Dentoni.—Mr. John Ford, of the Academy of Natural Sciences, Philad., has published and figured in the No. II. of the "Nautilus" a New Guinea form of *Helix*, allied to *Helix Tuckeri*, which he named in honor of the discoverer—Mr. Denton.

This shell certainly differs from *Helix Tuckeri*, Pfr.; the typical locality of the last-named shell being the small island in the Torres Strait named "Sir Charles Hardy's Island." It is distinguished by several particulars, the most striking of which is the continuous circular peritreme.

In examining this small group in my collection, I find that Mr Ford's species appears to coincide well with another previously described *Trachia*, viz.: *Helix cyclostomata*, Leguillon. I possess specimens in my cabinet that I long since separated from *H. Tuckeri*, on an account of the differences mentioned by Mr. J. Ford. This small, graceful species, which also inhabits one of the small islands (Warrior Island) in the Torres Strait, has been till now confounded with *Tuckeri*. Mr. Ford has probably failed to compare the original diagnosis, and *Helix Dentoni* is very probably to be added to the synonymy of *H. cyclostomata*, Leg. *Anctus Pilsbryi* of the same author is synonymous with my *B. capueira*, Spix., var. *laminifera*, Anc.

I must also note that before Mr. Pilsbry's publication of sub-genus *Gonostomopsis* (for *Helix auridens*, Rang.) I had given this group the name of *Chrysodon*, Anc.—C. F. Ancey.

QUERIES AND ANSWERS.

(Answers to Correspondents will be sent when advisable or convenient by post, but if not so sent they will appear in this column, and whether sent by post or not they will be inserted here if likely to be of service to other readers.)

J.H.A.J.—Dr. C. A. Westerlund has very recently published a bulky catalogue of European Land and Freshwater Mollusca, which is approximately complete.

W.E.C.—*Limax marginatus* Mull., 1774, has long priority over *L. arborum*, and should be used for the species, as Muller's description leaves practically no doubt what was intended. *L. sylvestris* Scopoli, 1772, appears to be a still older name for the same thing, but the description of this is too slight for certain indentification.

J.W.H.—*Helix virgata* v. *submaritima* Desm. is now considered to be *H. lauta*, Lowe. Two different varieties have been described as *submaritima* by Jeffreys and Moquin-Tandon respectively, and both of them are British. Probably the Jeffreysian variety will require naming, but the varieties of *H. virgata* are not well understood, and I did not think it wise to give it a new name in the "Brit. Nat. Cat."

SPECIMENS RECEIVED.

1. From Alston, Cumberland, 1000 feet above sea level, and within half-a-mile of the Northumbrian border. Sent by Mr. A. Belt.—*Vitrina pellucida*, *Hyalinia nitidula*, *H. cellaria*, *H. radiatula*, *H. alliaria*, *H. crystallina*, *H. fulva*, *Patula rotundata*, *Helix hispida* varying from form *fusca*, Mke. (clear reddish-brown) to form *cornea*, Mke. (pale horn), *H. fusca*. *Buliminus obscurus*, *Pupa cylindracea*, *Cionella lubrica*, *C. lubrica* form *hyalina*, *C. tridens*, *Limnæa peregra* var. *ovata* (a small form, 8 mill. long, apex decollate, shell thin, blackish), *Ancylus fluviatilis*. This little collection is of special interest from the high altitude at which it was obtained. Mr. Belt writes that *Helix arbustorum* was also moderately abundant there, but he did not find *H. aspersa*, *nemoralis*, or *hortensis*. He also sent a specimen of *Carabus nitens*, L., from Crossfell, Aug., 1889.

Mr. Manger submits for identification some specimens of *Stenogyra (Opeas) Goodallii*, which were found by Mr. Pearson at Chilwell, near Nottingham, feeding on the roots of the bulb of *Eucharis*.

Mr. C. H. Morris sends a puzzling series of bandless *Helix nemoralis*, all taken within two miles of Lewes, Sussex. They may be classified as follows:—

(1.) Forma nov. *purpureotincta*, very pale purplish, like var. *pallida* of *H. hortensis*. 5 specimens. Allied to f. *studeria*.

(2.) Forma *aurantia*, Ckll., orange, but not very characteristic. 6 specimens. Allied to f. *rubella*.

(3.) Forma nov. *fulvotincta*, very pale fulvous or pinkish-yellow. 6 specimens. A pale form allied to *petiveria*.

(4.) Forma *olivaca*, Gassies. 8 specimens.

(5.) Forma nov. *hepatica*, liver-colour, suture and part of the spire generally whitish. 9 specimens. Near to f. *castanea*.—T. D. A. Cockerell.

DESCRIPTION OF A NEW SPECIES OF HELICIDÆ.

BY C. F. ANCEY.

Ptychodon Magdalenæ, Ancey.

Testa orbiculato-depressa, opacula, fusca, in ultimo anfractu strigis indistinctis nonnullis paulo saturatioribus variegata, umbilicata (umbilicus circularis, circa ¼ mill. latus). Anfractus 5 regulariter lenteque crescentis, convexi, sutura impressa, embryonalis 2 lævigati, ultimus rotundatus, præcendente vix amplior, subtus depresso-convexiusculus, antice non deflexus. Spira convexa, vix elevata, obtusa. Apertura exigua, valde lunata, recta vel fere verticalis, lamellis obstructa, scilicet: parietalibus 5 (una magna, submediana, bifida et 4 minutissimis inter hanc et columellam); sub-collumellaribus 2 validis, dentiformibus, subobliquis, secunda quasi unciformi; palatalibus 7 minutis parallelis æquidistantibus. Peristomo simplex, acutum, margine supero leviter antice subprovecto.

Diam. 2, alt. vix 1 mill, alt. ap. ¾ mill.

New Zealand, probably in the Northern Island.

This wonderful little shell, of which I have two specimens in my collection, belongs to a group that has been erroneously referred by F. V. Hutton to the American Strobila (type: *Helix labyrinthica*). The latter forms a quite distinct genus, hitherto not recorded *now living* elsewhere but in America. I proposed the generic name *Ptychodon* for the new Zealand *Strobila leiodus*, Hutton (melius: *leiodon*), which is a *patuloid* shell, with a sharp peristome, and somewhat resembling

Plesiopsis, Anc. (*H. Lombardeaui*, Montr.)—a New Caledonia group—in form, and *Pitys* in having parallel lamella within its aperture.

The genus is, as far as known, restricted to New Zealand; the present species is separable at a glance from its congener—in being more depressed, more widely umbilicated, and the number of lamellæ.

Insecta.

LIST OF THE LEPIDOPTERA OF ABERDEENSHIRE AND KINCARDINESHIRE.

BY WM. REID, PITCAPLE.

In compiling the following list of Lepidoptera of Aberdeenshire and Kincardineshire, I have had the assistance of Messrs. Horne and Milne, of Aberdeen, and many other local entomologists have done their utmost to make the list as complete as possible. I have also taken advantage of the notes contained in the "Zoologist," "Entomologists' Monthly Magazine," "Entomologist," "Young Naturalist," "Scottish Naturalist," Prof. Trail's "Lepidoptera of Dee" (Transactions of Aberdeen Natural History Society), and various other magazines, &c. In quoting the above magazines, I have used the usual abbreviations.

When no localities are given it is to be understood that the species have been taken over all the district.

The arrangement and nomenclature is according to the Doubleday list.

DIURNI.

Pieris Brassicæ.—Common everywhere, and in some years abundant.

Pieris Rapæ.—Common everywhere, and very variable.

Pieris Napi.—Common. Specimens approaching the Continental var. *Bryoniæ* used to be common on Ben-na-chie (larvæ feeding on watercress); but I have not seen any for several years.

Anthocaris Cardamines.—Locally common near Kintore, Fintray, Inverurie, Burnharvie, Fyvie, Dess, &c. This species has been gradually becoming scarcer lately, and has quite disappeared from many localities where it used to be common—Logie, Elphinstone, Balbithan, &c.

Colias Edusa.—Denmore ("Ento.," Vol. XXII., p. 279).

Argynnis Paphia.—Once at Muchalls (Lep. of Dee), and once in 1872, on Ben-na-chie.

Argynnis Aglaia.—Abundant in a nnmber of inland localities. Common all along the coast. ♀ dark.

Argynnis Selene.—Local, but abundant.

Argynnis Euphrosyne.—Very local, but fairly common. Appears about a couple of weeks before *Selene.*

Melitæa Artemis.—Very local. Common at Pitscurrie Moss. Scarce near Monymusk and Fyvie. Was once abundant at Loch Shangie, near Kenmay. Our specimens are known by the name *Scotica*, Whyte.

Vanessa Urticæ.—Abundant everywhere; larger and brighter than English examples.

Vanessa Polychloros.—Mr. Tait, of Broomend, Inverurie, has one which he captured in his own garden; it is a little damaged, and had evidently been flying for some time (see "Scot. Nat." Vol. I, 1872).

Vanessa Antiopa.—Several were seen near Aberdeen, Inverurie, and Braemar, in 1872; three were taken by a working man in Keithall garden, and Mr. Burnett, of Balbithan, saw two which were not taken.

Vanessa Io.—Single examples have been taken at various times in Aberdeenshire (Prof. Trail).

Vanessa Atalanta.—Sometimes common; the larvæ were excessively abundant in 1878.

Vanessa Cardui.—Uncertain. Abundant in 1879, common in 1884, 1887, and 1889; the larvæ were also common in 1889.

Erebia Blandina.—Common in Braemar; once at Bay of Nigg. This record is culled from Prof. Trail's "Lepidoptera of Dee."

Satyrus Ægeria.—Two caught at Hazelhead, near Aberdeen.

Satyrus Megæra.—One seen by myself at Harlan, in 1874.

Satyrus Semele.—Common along the coast near Peterhead and south of Aberdeen; larger and brighter than English examples, very like Swiss specimens.

Satyrus Janira.—Abundant everywhere. Var. *Splendida* (Whyte), widely distributed and not rare.

Satyrus Hyperanthus.—Very local; but abundant at Fyvie, Inverurie, Tillyfourie, Cruden, and Morven.

Cœnonympha Davus.—Abundant on all moors where I have collected. Specimens with large ocellated spots on upper surface are rare; but very light-coloured ♀'s are sometimes met with.

Cœnonympha Pamphilus.—Common almost everywhere.

Thecla Rubi.—Scarce at Fyvie and Tarland. Mr. McAldowie once captured it freely near Banchory.

Polyommatus Phlæas.—Abundant everywhere. I captured a silver variety many years ago.

Lycæna Agestis.—Taken by Mr. Tugwell, near Inverurie (" Ento.," 1886, p. 218).

Lycæna Agestis, var. Artaxerxes.—Locally abundant; Muchalls has long been noted as a good locality. I have taken a few almost identical with the Alpine var. *Allous*, and also a few in which the rusty spots approach the dimensions found in var. *Canariensis* (Blachier) from Teneriff. I have also seen them with hardly a trace of the white discoidal spots, and in others, the white spots have black centres, especially the white spots on the under side of posterior wings.

Lycæna Alexis.—Common everywhere, especially roadsides and along the coast. Have taken ♀'s almost as blue as the ♂, and once saw a ♀ with the discoidal spots on upper surface of anterior wings white, reminding one strongly of *Artaxerxes*. Mr. Milne, of Aberdeen, has a ♀ with the discoidal spots of the anterior and posterior wings surrounded with white; it has also a couple of white dashes near the tip. I understand it was taken near Banchory last year. I have several times seen the form taken here about, but they are rather scarce.

Var. *Icarinus* rather scaree. The true var. *Icarinus* is very seldom taken here. Our specimens have a tendency to have more than the two eye-spots between the discoidal and base of wings wanting.

Lycæna Alsus.—Not rare inland, and common along the coast.

NOCTURNI.

Smerinthus Ocellatus.—Once by Mr. Line, at Fyvie, (" Lep. of Dee").

Smerinthus Populi.—Larvæ common everywhere.

Acherontia Atropos.—Scarce, but generally recorded every year. I have seen a number of Aberdeenshire specimens, and have one in my possession. The larvæ have been found at Inverurie, among potatoes.

Sphinx Convolvuli.—Uncertain, but sometimes not rare. Mr. Macintosh once told me that he captured eleven in one year at honeysuckle flowers, near Fyvie.

Deilephila Galii.—Several in Aberdeen and elsewhere. Mr. Horne has one which was captured in 1888—the great *galii* year,—and I believe other two were taken in Aberdeen the same year, and at least one larva was discovered on the sandhills in the autumn.

Chærocampa Celerio.—Once at Peterhead and Fyvie, and three in Aberdeen. The last capture was taken in a mouse-trap only a few years ago.

Chærocampa Porcellus.—Occurs on the coast near Aberdeen, and has been taken at Inverurie by Mr. Tait. The larvæ are not rare on the sandhills.

Chærocampa Elpenor.—Bred from larvæ found in Aberdeen by Dr. Jasdowski.

Macroglossa Stellatarum.—Always scarce, occasionally almost everywhere.

Macroglossa Bombyliformis.—Scarce. Old Aberdeen Links, Scotston Moor, Monymusk, and Mr. Tait has one which he captured in Tom's Forest, near Inverurie.

Sesia Culiciformis.—Among birches near Castleton, Braemar (Dr. White). Have seen traces of the larva in Logie Elphinstone Woods (Reid.)

Sesia Philanthiformis.—Along the coast south of Aberdeen. The larvæ may be found in rhizomes of *Armeria maritima*. This insect is not known to occur elsewhere on the east coast of Britain (Prof. Trail). Mr. Horne, of Aberdeen, has taken the larvæ near Muchalls.

Sesia Bembeciformis.—This insect is said to have been taken by the late Donald Macintosh near Fyvie, among sallows, in 1872.

Cossus Ligniperda.—Scarce near Fyvie.

Hepialus Hectus.—Locally abundant.

Hepialus Lupulinus.—Near Aberdeen.

Hepialus Sylvinus.—Near Muchalls, Banchory, Fyvie, Aberdeen, &c.

Hepialus Velleda.—Abundant everywhere, and very variable.

Hepialus Velleda, var. Carnus.—Sometimes not rare.

Hepialus Humuli.—Common. A beautiful pink variety of the ♀ has occasionally been taken. The ♂ is very constant, but the ♀'s are excessively variable. I have sometimes seen great numbers of the Black-headed Gull hawking for this species at dusk.

Zygæna Exulans.—Local, but abundant in several localities about 2500 feet above sea level near Braemar ("E.M.M.," Vol. VIII.; also "Ento.," Vol. XIX., 1886). The only British habitat.

Zygæna Trifolii.—One said to have been taken near Stonehaven ("Lep. of Dee"), probably only a variety of the next.

Zygæna Filipendulæ.—Locally common, Loch Shangi, Kintore, Muchalls, &c. The two outer spots in our specimens are are almost always confluant, the sixth spot has always a tinge of yellow, and the ground colour is bluish instead of green.

Nudaria Mundana.—Common at Muchalls.

Setina Irrorella.—One at Muchalls last year (1890) Mr. Esson.

Lithosia Complanula.—Along the the coast south of Aberdeen, I have taken it at Muchalls.

Lithosia Rubricollis.—Has been taken at Fyvie.

Euthemonia Russula.—Scarce and local, Banchovy, Parlu, Inverurie, Monymusk, &c. (Trail).

(To be continued.)

THE GENITAL ARMATURE OF THE GENUS MIANA.

BY F. N. PIERCE, HON. SEC. LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.

It is again my privilege to bring before the notice of your readers the most interesting structure of the genital armature of the Lepidoptera, and I have chosen the genus *Miana* on account of the discussion that is now taking place as to whether specimens at present called *strigilis* and *fasciuncula* are really distinct, or only varieties of one species. It may be argued by our veterans that the matter was settled years ago; may I be pardoned for reminding these that the word "settle," according to the dictionary, means to "fix permanently;" that these species are not "fixed permanently" is very evident, as I will try and point out by a few examples. Of the life history very little seems known definitely, the published descriptions of the larva of *strigilis* differing in many points. Many entomologists have bred odd specimens of both forms; but until both forms have been bred from one batch of ova, there are many entomologists who will never believe them to be the same species. Mr. Stainton treats them as separate, differentiating them by colour – blackish-brown, *strigilis;* reddish-ochreous, *fasciuncula.* Mr. Newman gives them distinct, remarking that he follows Haworth and Doubleday, although the famous French entomologist Guenéé makes *fasciuncula* a variety of *strigilis.* On the Continent this statement seems generally accepted, for Kirby, in his "European Lepidoptera," following Staudinger's Catalogue, after describing *strigilis*, remarks: –"*fasciuncula*, which some consider another variety of *strigilis*, is smaller, reddish-ochreous, &c." Thus do we find that our authors disagree.

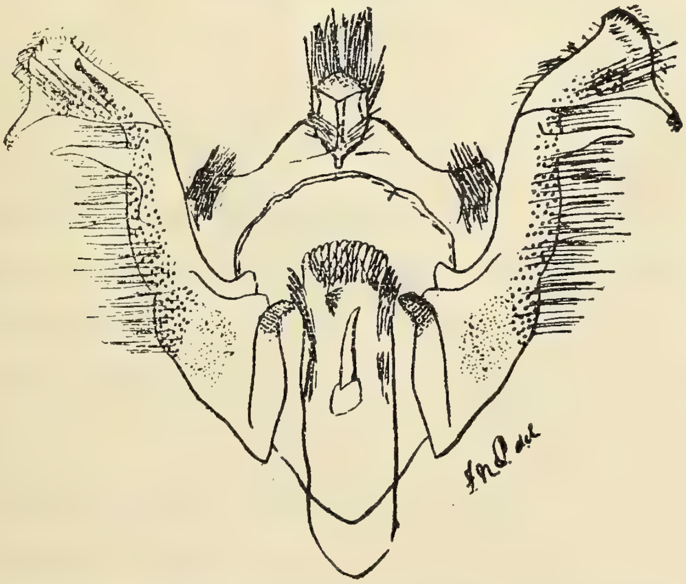
I would also point out that whereas the larva of *strigilis* has been bred and figured, I can find no case of figuring the larva of *fasciuncula.*

The matter rested for many years, everyone apparently satisfied with the way it was left, until the Rev. W. F. Johnson, of Armagh, sent Mr. Tutt specimens, which the latter describes as perfectly intermediate, and equally well named as either species. I have not had the pleasure of seeing these specimens, and the published account of them is very meagre, not even mentioning the number of specimens, nor the form they most resemble. It is not, therefore, to these specimens, that the point of discussion tends, but simply whether the ordinary specimens usually so easy to distinguish, and called *strigilis* and *fasciuncula*, are, or are not, distinct species. If they are, then their structure—*i.e.*, the hard chitine—should be the same; if they are not, then there should be points of difference in this structure sufficiently constant to designate them species.

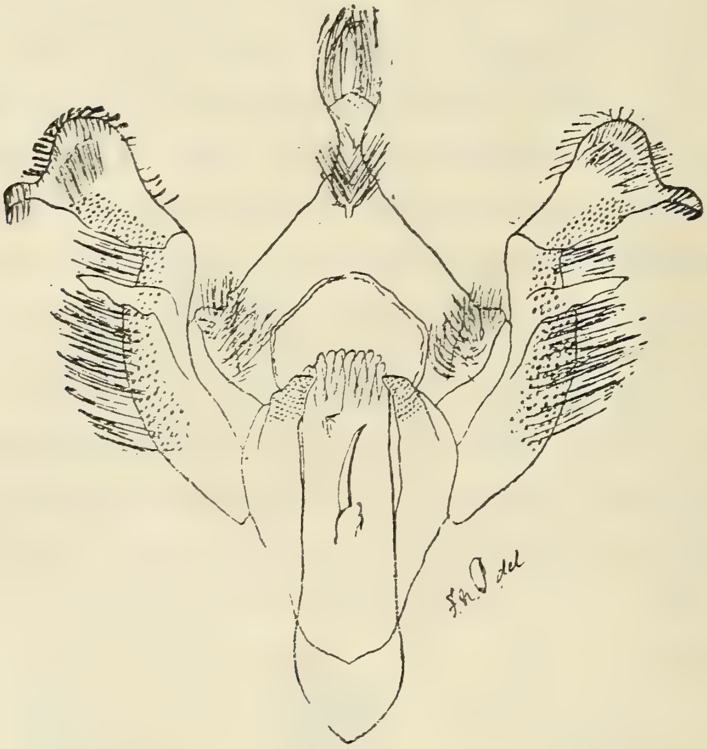
As some of your readers may not have followed the discussion, I will briefly run over the various arguments put forward.

When Mr. Tutt exhibited the Armagh specimens and his own species, he positively affirmed that *fasciuncula* was a variety of *strigilis* "without doubt;" but from the subsequent discussion, it was evident other entomologists saw there was considerable doubt, and were by no means satisfied by the mere assertion of one man, made on the superficial resemblance in the markings or colour of the wings of a small number of specimens. Then commenced the discussion, and first one and then another argument was held forth as bearing on the subject. Mr. Robson in this Magazine after commenting on the resemblance of other species, says these two species never resemble each other, and brings forward a strong argument; he states they assume the perfect state at different times of the year, and their flight is so different that could we see them together on the wing that alone would be sufficient to distinguish them. That they appear at a different time is not a safe guide. I have myself taken both off treacle in abundance at the same time, but on the other hand *fasciuncula* flies very abundantly at Bidston Marsh in June and July, and you may capture any number, flying low, close to the ground, almost like the swifts, without capturing a single *strigilis*, but on the same evening on the sandhills adjoining, you may take any number of *strigilis* at treacle. Mr. Tutt, on the 15th of the same month, shows in the "Record" how he arrived at the conclusion of the identity of the species. In the following month, Mr. South in the "Entomologist" endeavoured to prove that there are neither one, nor two, but three species!! Mr. South's classification is mainly based on the crests or tufts of hair on the body, the third species apparently being intermediate, as it partakes of the *fasciuncula* colour, but has the *strigilis*-like dorsal tufts on the body. This, at a meeting of the South London Entomological Society, seemed to be overthrown, for Mr. Tutt, according to the "Record," pointed out that the dorsal tufts were equally well developed in both species, and produced specimens to show this. Then came a most interesting point, Mr. Fenn expressed an opinion that all the Armagh specimens were dark *fasciuncula*, Mr. South that two were *strigilis*, and the rest *fasciuncula*, other members considered that three of the specimens were referable to *strigilis*, the others to *fasciuncula*. Then Mr. Tutt agreed with all these different views, because he stated the questionable varieties might with equal propriety be called either one or the other, so that at the end nothing was decided.

While this controversy was going on I was surprised to find that no one suggested the examination of the genital armature, possibly for want of thought, and more probably for fear of spoiling a fine cabinet series. I therefore determined I would make the experiments myself, and being unprejudiced, would lay the results faithfully before those interested. With this view I gathered together as many specimens as I could and I beg publicly to thank Mr. Robson, Mr. Harwood, of Colchester, and Mr. Stott of Bolton, for a very liberal supply of most beautiful forms for examination, these with my own specimens, collected in Suffolk, Staffordshire, and Cheshire, gave me a fairly representative selection to work upon. The specimens were prepared exactly as described by me in the "Young Naturalist," for 1889, vol. x., page 51, and I at once saw that the two forms of wing markings, presented equally different forms in the structure of the genital appendages. The following is a description of the points of difference in each, which with the aid of the rather rough but accurately drawn figures, will enable any one to immediately separate even the most obscure specimens. The figures were drawn with the aid of an eye piece micrometer, and therefore the difference in the size of the figures is correct, the magnification being the same in each instance.



Miana fasciuncula has the large outside appendages, in the form of a bird's head with a long beak, there are a few small hooks on the crown, and also at the tip of the beak; a little lower down there is a long narrow almost parallel projection terminating in a rounded end; at the top of the figure is seen an organ the shape of which is the most distinctive character, the two sides are parallel for nearly the whole length, when they suddenly narrow off into a bulbed point; the portion to which this organ is joined will be noticed to be broad, it narrows off gently from the large appendages, until it terminates with a turn at the above organ. This, besides containing the usual large hooks, has two very distint bunches of hooks situated at each side near the head.



Miana strigilis.—In the large appendages the beak is more abrupt, and the hooks, which are stronger, are carried right along the crown to the tip of the beak; lower down there is a projection, which has a base thicker than *fasciuncula*, and quickly narrowing to a point (both these portions are slightly subject to variation for which I am unable at present to suggest a reason), the other organs which do not vary at all, are, the organs terminating the central portion, which is more pointed than in the other species; this organ is narrowed from the base towards the middle, and thickens again before tapering off to the point, a very elegantly vase shaped organ, and which is entirely without the bunches of hooks which are present in *fasciuncula*. Of the remaining two species the large appendages have no beak and are densely clothed with strong hooks in *literosa*, whilst in *furuncula* they are differently shaped, are also without the beak, and the hooks are quite absent.

In all I examined 14 specimens of *fasciuncula* of both the ochreous and reddish forms, all of which had the distinguishing characters of this species just described; and 26 specimens of *strigilis* including the type, and all forms, through the varieties *latruncula* and *æthiops*, all of which perfectly agreed in the distinguishing characters of this species.

At the Meeting of the Lancashire and Cheshire Entomological Society at which this paper was read, I projected the actual preparations on a screen, by the oxyhydrogen Micro Lantern, and all present expressed themselves satisfied that the specimens shown did not differ *inter se*. Possibly some may suggest pressure altering the form of structure, but when they consider the number of specimens operated upon, and the constant characteristics present in every specimen of each species, they will see that such an argument is baseless. If anyone wishes to examine them themselves I am quite willing to send my preparations for their consideration. Should any of your readers wish to test the accuracy of this method of distinguishing species, let him send me the body of a male, carefully cut off, that he knows to be an undoubted specimen of any of the four species of *Miana* inhabiting Great Britain, and I will undertake to examine and name it from the genital organs alone.

143, Smithdown Lane, Liverpool, 10th March, 1891.

Notes.

HELIOTHUS SCUTOSA IN KINCARDINESHIRE.—I have just had the pleasure of seeing an example of the above species which was captured by Mr. A. H. Duncan, in July, 1878, at Bay of Nigg, near Aberdeen, it was flying in the bright sunshine over the rough ground and stones. The specimen is now in his father's collection, and is spoilt by grease and has lost its antennæ, but is otherwise quite perfect and distinctly marked.—WM. REID, Pitcaple, N.B., Feb., 1891.

NOTES ON LEPIDOPTERA IN DONCASTER AND DISTRICT.—The long continued frost made collecting quite out of the question in January, but with February came a change in the weather, and on the 5th I made my first visit for this year to Wheatley wood. I found, as I had previously found, after long and severe winters, that some of the autumnal species were still to be seen. *Aurantiaria* ♂ *Defoliaria* ♀ and *Brumata* ♂ were in evidence. Along with these *Pilosaria*, a few *Leucophearia*, and one newly emerged *Æscularia*. Larvæ of *N. aurella* were abundant and a few cases of *Pseudo-bombycella* were also to be found. On the 12th and 13th *Leucophearia* was common, a few *Defoliaria* ♀ were still out. 15th *Depressaria applana* were common, flying about the hedges at 6 p.m. 23rd *Leucophearia*, becoming less common, whilst *Pilosaria* was now the more abundant species. 27th, I only saw on *Leucophearia*. *Progemmata* seen for the first time.

Leucophearia varied very much. The form with the base and hind margin dark, and the central band distinctly paler (v. *marmorinaria*, Esp.) being in the proportion of about 1 in 6. During the month (February) I have bred a few *Lithocolletis canella* from larva collected in Wheatley wood last autnmn.—H. H. Corbett, M.R.C.S., Doncaster.

Aberdeenshire.—I have just returned from Forres with a good supply *R. resinana* larvæ, full fed and almost ready to pupate. I am doing well also with *S. anomala* and other things. *L. Multistrigaria* is out, and I have got ova. I was out yesterday with Mr. Hume and we managed to pick up a few *Myricæ* pupæ.—Wm. Reid, Pitcaple, 28th February, 1891.

Abraxas Ulmata in Worcestershire in 1828.—About the year 1828 this insect was met with abundantly at its locality in Worcestershire, about 12 miles from the city. It was then called the "Scarce Magpie." The specimens were decidedly darker than it appears to be now, and resembled the figure in Newman, which I have reason to believe was figured from one captured by Mr. Edmunds, then of Worcester. I am told that the specimens still in Worcester Museum are all of the darker type.—J. Tyrer, Chatham, 14th July, 1891.

Larvæ.

Odonestis potatoria.—Every spring for several seasons I have picked up larvæ of this species in the hedge banks, always taking the most on warm damp evenings, when the herbage was saturated with moisture, these larvæ in particular revelling in it, and eagerly imbibing the drops of water which were on the grass. A reason then struck me why several of my friends had not succeeded with the species unless they took them when about full fed, viz.: that they forgot to give them water to drink, lavæ of this species must either have it or die, as they are particularly thirsty creatures, though quite teetotal in their habits.

The method I pursue for all spring grass feeding larvæ is to have a large tub with grass and weeds growing therein. I give this a good shower night and morning with a watering can, just enough to nicely damp the surface. This I find does the larvæ no harm but rather good, and I feel sure is the salvation of *Potatoria* larvæ and renders their successful rearing a much greater certainty.

In 1889 two larvæ remained very late in that stage. The one spun its cocoon August 3rd, and a small well-marked male emerged September 6th. The other larva remained perfectly healthy till September 26th and then sickened and died. It was full grown, Both these were taken in the spring 1889.—A. E. HALL, Norbury, Sheffield, February, 1891.

SATYRUS SEMELE AND THECLA QUERCUS.—It is generally known that *S. semele* pupates below the surface of the earth, and that the pupa is brown and smooth and shiny like those of noctuæ. It does not, however, appear to be so well known that the larva of *Thecla quercus* also pupates underground, sometimes making a frail cocoon of soil just on the surface of the earth, or availing itself of the shelter of a fallen leaf. The chrysalis is of a shining rusty brown colour with three rows of brown spots on the back. In shape it is stout and rounded in outline.—ID.

MIANA STRIGILIS AND FASCIUNCULA.—While larvæ searching in a hedge bottom not far from here about 9.30 p.m. May 8th, 1889. I found about half-a-dozen curious larvæ. They were of a very hard texture, of a dull dirty white colour and much attenuated at each extremity. I noticed two of them were much smaller and rather differently marked to the others, but going away from home the next day prevented my taking further details, so put them in a box by themselves and left them. On my return I found they had pupated. On July 6th one *strigilis* var. *æthiops* and one *fasciuncula* of exquisite reddish form emerged and on July 8th one *strigilis* var. *prædimcula*.

Here at Sheffield only two forms of *strigilis* occur, viz: the vars. *æthiops and prædimcula*, the type being unknown; of *fasciuncula* the reddish form is the commoner though the paler form also occurs. This latter species is always here very much smaller than *strigilis* and most easily distinguishable.—ID.

MANIA TYPICA.—*Mania typica* is a very common London insect—that is in its larval stage. I cannot say that I ever met with it previous to my London life, but perhaps that was owing to my ignorance of its life history. Soon after coming to town I found some larvæ congregated together and eating the under sides of the leaves of *Rumex*, *Epilobium*, &c. I took a quantity and tried to rear them, but was unable to carry them through the winter. Next year I got some more, and decided in my own mind that they were some very common species. I kept them indoors this time, and was very much interested in watching them at night time when they came out to feed. We had a lot of *Epilobium hirsutum* in our garden, so I gathered some, and I put it in a wide-mouthed bottle with water. It soon died and shrivelled up, but I sprinkled it with water once a week, and the larvæ must have commenced to feed on it in January, as they moulted and began to grow. Then I supplied them with a blade or two of Iris and I soon observed notches eaten out. I felt sure then that I should be able to breed the moths. The larva kept eating and growing until the end of March, when they were exceedingly fine and handsome. Then I noticed their gradual disappearance below ground. In about four weeks—that is by about the last week in April—the first moth emerged, very soon my boards were full with them, and I allowed a number to fly away. This species is very easy to rear when once you know them, as I suppose is the case with almost all common moths. One thing I particularly observed, they did not try to commit suicide by drowning, like some other larva. I dare say this is all very stale to you who have gone through the same yourself, but it afforded me great delight at the time, and I cannot altogether forget the old loves, although I have taken up with Coleoptera.—G. A. LEWCOCK, London, 8th March, 1891.

NOTES FOR BEGINNERS.—MICRO LARVÆ FOR THE MONTH.

BY GEORGE ELISHA, F.E.S.

The month of April is always welcome to the entomologist, for its sunshine and occasional showers soon alter the appearance of the lanes and woods; the wild plants are now growing fast, larvæ are getting plentiful, and the time has arrived when we must begin the season in earnest, for many species feed up rapidly and are seen no more for another year; so at the first opportunity, on some fine, balmy morning, we are tempted to take a trip of a few miles into the country in hope of getting the larvæ of some species that may be useful to our collection or in helping friends, or perhaps of finding the larva of one of one of the many species that have as yet baffled our most careful and observant entomologists. We must have a keen eye to examine the cause of every twisted leaf, distorted shoot, or unhealthy-looking plant we may come across, for these are the places where larvæ will be found, and as we leisurely walk along, what a relief it seems to get away from the busy town life for even a short time, to such a quiet country place, and how exhilarated one feels in the pure, clear atmosphere of the early morning, in these first trips of the season, listening to the many sounds of approaching summer, till one almost forgets the object that brought us to such a pleasant place this lovely morning.

In the first place, it is as well to be provided with a few unbleached calico bags about ten inches by eight, a few tin boxes, and a strong knife. We do not proceed far along the lane before our attention is attracted by the bleached appearance of some of the leaves in the patch of ground ivy *(Glechoma hederacea)* growing by the roadside; on turning the leaves over we find some long curved, black cases attached to the under side, these are the larvæ of *Coleophora albitarsella*, one of a family of moths of which the whole of the larvæ are case-bearers. Just pick the leaves on which the cases are and put them into a tin box, taking a clump of the plant for them to continue feeding on, as we return home. The larvæ of *Scoparia olivalis* will be found in a web on the under side of the leaves of the same plant. A little further on, the Stitchwort *(Stellaria holostea)*, which is now growing rapidly, has its leaves bleached in the same manner by the larva (in their straight, whitish cases) of *Coleophora solitariella*, and in the shoots of the same plant the larva of *Gelechia tricolorella* is at work, giving them a distorted appearance. *Coleophora olivaceella*, in their brownish cases with a distinct keel, is another species feeding on the same plant; but it is extremely local, although generally distributed.

We proceed onward, and soon the sun cistus *(Helianthemum vulgare)* growing in patches on the dry, chalky, hedge bank, attracts our notice, for the bleached appearance of some of the leaves reminds us that the larva of *Laverna miscella* is at work within; and in the shoots of

Cerastium vulgatum, growing plentifully on the same bank, the larva of *Gelechia fraternella* will be found drawing the shoots together. If we now examine the shoots of the currant bushes in yonder field, we shall observe some of them are drooping over and withering. On cutting the shoot and breaking off the top, if we find a dull, greenish larva, with black head, inside the stem, that would be the larva of *Incurvaria capitella;* and the larva of *Lampronia rubiella* feeds in precisely the same manner in the shoots of raspberry.

We continue our pleasant stroll, and are soon busy examining the bleached leaves on the wild rose bush, and filling a box with the flat, serrated cases of *Coleophora gryphypennella*, not forgetting the drawn-together shoots containing the dull-brown larva of *Spilonota roborana.* In hedges where the common hart's-tongue fern is growing plentifully, we must stop and examine some of the long fronds ; on turning them over the larva of *Psychoides verhuelella* will be seen burrowing among the indusia, seemingly quite at home. On old palings the long, slender cases of *Talæporia pseudo-bombycella* is seen occasionally ; in breeding these larvæ it is best to scrape them carefully off the paling, and pin them on to the side of the breeding-cage by that portion that was attached to the wood, for the imago emerges from the top of the case. If we cut a good supply of birch catkins from old trees, we are pretty sure to breed a good series of *Pœdisca bilunana.* In damp places in open parts of woods, the larva of *Ephippiphora pflugiana* will be found in old thistle stems, the small round holes betraying their presence. On leaves of sallow the larva of *Coleophora viminetella* is making the usual blotches, and on the seeds of rushes the cases of *Coleophora cespititiella* is in plenty. In the topmost shoots of Scotch fir trees we may still find a few pupa of *Retinea turionana*, but most of them by this time have been cleared out by the birds. By searching on the ground under spruce fir trees, the distorted cones containing the larvæ of *Coccyx strobilana* will repay the trouble of raking among the dead leaves, for caught specimens of this species are not to be compared to bred ones.

If we examine the shoots of furze growing on heaths, some of the shoots will be found drawn together with a mass of white web ; in this web will be found the larva of *Butalis grandipennes*, and between the tufts of broom some stragglers of the larva of *Depressaria assimilella* have not yet left the stems to pupate on the surface of the ground.

On examining the plants of *Echium vulgare* growing on dry, chalky slopes, the tips of some of the radical leaves appear to be withered, but in reality this is caused by the young larva of *Coleophora onosmella;* this they afterwards cut off and use as their case, and they keep adding to it till it becomes a bulky, woolly-looking case by the time the larvæ are full grown. On the leaves of *Lotus corniculatus* the larva of *Coleophora discoidella* will be found now and then in their cornucopia-shaped cases. The ox-eye daisy has its leaves mined by the larva of *Bucculatrix aurimaculella;* dig up the plants and pot them, and soon the larvæ will spin their beautiful reticulated cocoons. The carline thistle growing on chalky slopes have the leaves drawn together by the larva of *Depressaria nanatella*, which feed on the upper surface; and *Gracillaria tringipennellu* feed in the same manner on leaves of plantain.

As we pass the wood by the roadside we notice the bleached appearance of the leaves, and soon find this is caused by the larva of *Coleophora laricella*, and on the leaves of *Ballota nigra* another *Coleophora (lineola)* is at work making conspicuous blotches, and in the radical leaves of *Scabiosa columbaria* in sheltered places, the larva of *Lithocolletis scabiosella* is now to be found.

In the stems of wild cabbage, growing on the cliffs in most places on the south coast, the larva of *Stigmonota leplastriana* is now to be found easily by the little tufts of brownish frass exuding from holes in the stems and shoots, and the old stems of *Marrubium vulgare* containing the pupæ of *Leioptilus microdactylus*—if we are in want of the species,—in damp hedge banks. In similar places the hemlock *(Conium maculatum)* is now getting high; by examining them closely we find some of the tips of the leaves folded over, by taking a good supply we should breed some fine specimens of *Depressaria alstremeriana* and *Weirella*, and while in this neighbourhood, the muddy banks of tidal rivers must be examined for old stems of sea lavender, some of which are still to be found, for they contain the pupæ of *Coleophora limoniellæ;* and now I think we will content ourselves for this month by getting all we can of the above, and prepare our cages for what is to come next month, for then in reality we shall have a busy time.

Shepherdess Road, London,
March, 1891.

THE DIPTERA OF DORSETSHIRE.

BY C. W. DALE.

(Continued from page 6).

NEMOCERA.

FAMILY—MYCETOPHILIDÆ.

This family is composed of extremely active insects, capable of leaping by means of their long hind legs. The body is generally compound, the coxæ long, and the tips of the tibiæ armed with spurs in a similar manner to the Pulicidæ, and their movements are short, skipping, and abrupt. The larvæ of most species feed on Fungi or Boleti, and spin silken webs, within which they become pupæ. They are particularly found in damp situations, amongst various plants, dead leaves, and moss, in which many species hibernate, and are frequently found in the windows of our dwellings.

Many of the family posseas very prettily marked wings, and some are exceedingly rare I beg to call particular attention to three species—*Leia elegans*, *Eupheria pictipennis*, and *Leptomorphus Walkeri*. *Leia crassicornis* and *Glaphyroptera winthemii* are also rarities. Stephens, in his "Illustrations of British Entomology," has figured two species, *Prymosia zonata* and *Glaphyroptera ornata ;* which figures and names have been ignored by all subsequent writers. Amongst the smaller species and more obscure genera much work remains to be done. The following are the Dorsetshire species, all of which have occurred in the parish of Glanvilles Wootton :—

1. *Myceptopila lineola*, Meig. Generally distributed.
2. *M. punclata*, Meig. Generally distributed.
3. *M. bimaculata*, Fab. Generally distributed.
4. *M. lutescens*, Zett. Larger than last, and rare.
5. *M. signata*, Meig. Generally distributed.
6. *M. cingulum*, Meig. Larger than last, and rare.
7. *Zygomia notata*, Stan. Beaten from ivy.
8. *Z. pictipennis*, Staeg. Rare. Glanvilles Wootton.
9. *Sceptonia nigra*, Meig. Common in moss.
10. *Rymosia zonata*, Steph. Common in windows and amongst ivy. It is figured by Stephens in his "Illustrations of British Entomology;" but it is probably the same as *M. fasciata*, Meig.
11. *R. fenestralis*, Meig. Common in windows and amongst ivy.

12. *R. lateralis*, Meig. Common in windows and amongst ivy.

13. *Exectria fungorum*, Dey. Generally distributed.

14. *Glaphyroptera fuscipennis*, Meig. Generally distributed.

15. *G. Winthemii*, Lehm. Rare. Glanvilles Wootton.

16. *G. ornata*, Stephens "Illustrations." Perhaps the same as *G. picta*, Meig. Of frequent occurrence at Glanvilles Wootton. I have also taken it at Lairg, in Scotland.

17. *Docosia sciarina*, Meig. Generally distributed.

18. *D. valida*, Winn. Rare. Glanvilles Wootton.

19. *Leia elegans*, Winn. Of this pretty and new British species, I took a couple at Glanville's Wootton, on August 9th and October 3rd, 1889.

20. *L. crassicornis*, Curt. One of this rare species was taken at Glanvilles Wootton by J. C. Dale, on May 20th, 1869, and also another by myself.

21. *Lasiosoma lutea*, Meig. Generally distributed. The larvæ spin webs on fungi growing on pear and other trees. From this species I have bred *Orthocentrus corrugator*, Holm.

22. *Empheria pictipennis*, Hal. Of this exceedingly scarce and beautiful species I took an example at Glanvilles Wootton, on October 8th, 1887. I believe the only other one in existence is the one Haliday described in "Ent. Mag.," Vol. I., 1833.

23. *Leptomorphus Walkeri*, Curtis' "British Entomology." Of this rare species one was taken by my brother, in July, 1880, and another by myself, on the wing, on September, 10th, 1888.

24. *Sciophila marginata*, Meig. Generally distributed.

25. *S. hilaris*, Walk. Rare. Glanvilles Wootton.

26. *Boletina dubia*, Staeg. Generally distributed.

27. *B. dilaticornis*, Curt. Rare. Glanvilles Wootton.

28. *Anaclinia nemoralis*, Meig. Generally distributed.

29. *Platyura vitripennis*, Walk. Perhaps the same as *atrata*, Fab. Rare. Occurs occasionally at Glanvilles Wootton in July. I have also taken it near Lyme Regis.

30. *P. fasciata*, Lat. Rare. Glanvilles Wootton.

31. *P. rufipes*, Hoff. Generally distributed.

32. *P. flavipes*, Meig. Generally distributed.

33. *Asindulum flavum*, Winn. Generally distributed.

34. *Macrocera lutea*, Meig. Common amongst nettles, &c.

35. *M. fasciata*, Meig. Common amongst nettles, &c.
36. *M. stigma*, Curt. Common amongst nettles, &c.
37. *M. centralis*, Meig. Generally distributed.
38. *M. phalerata*, Hoff. Generally distributdd.
39. *Bolitophila fusca*, Meig. Common even in winter.
40. *B. cinerea*, Hoff. Rare. Glanvilles Wootton.
41. *Sciara Thomæ*, Linn. Common in August.
42. *S. ruficauda*, Meig. Rare. Of this rare and red abdomened species I took two specimens in October, 1880.
43. *S. morix*, Fab. Generally distributed.
44. *S. pallipes*, Fab. Generally distributed.
45. *S. fuscipes*, Meig. Generally distributed.
46. *S. brunnipes*, Meig. Generally distributed.
47. *Zygoneura sciarina*, Meig. Rare. Glanvilles Wootton.
48. *Bradsia brevipennis*, Walk. Rare.

Obituary.

ROBERT CALVERT.

By the death of Mr. Robert Calvert, of Bishop Auckland, the North of England, and the County Palatine in particular has lost one of its best known all-round Naturalists, one of those hardworking practical field observers and ardent lovers of nature who have done so much to increase the stores of knowledge of local floras and faunas. Born at Bishop Auckland, in the early teens of the present centuary, he had witnessed a developement of the natural resources of his native county which has completely altered many of its natural features and characteristics, so that the records of his collectings, extending over a period of more than fifty years, and published some seven years ago in his "Notes on the Geology and Natural History of Durham," forms a repertory of facts of the greatest possible interest to both the student and collector. Born of humble parentage, and receiving only the scantiest rudiments of early education, Mr. Calvert may be classed as a self-taught man. Although able to discourse in terse graphic and vigorous language on his favourite themes, he never aspired to be a public teacher and the book alluded to was the sole product of his pen. By assiduous industry he amassed a comfortable competence and his later years were spent in comparative retirement, but up within a week of his decease his walks, if shorter, were none the less frequent, and his brisk alert step and quick nervous action gave no indication of the sudden close of his career. Equally familiar with Geology, Entomology, Ornithology, and Botany it would be difficult to say which was his favourite study. His large collections of Fossils, Birds, and Insects were chiefly the results of his own explorations and are exceptionally valuable as showing the richness of our county. But many of the habitats of his captures are now so altered, physically, that their denisens are extinct and may be hunted for in vain. Mr. Calvert could not be classed as a systematic scientist, indeed he had an unconcealed contempt for the arm-chair naturalists, but inspired by an ardent love of nature, and actuated by a restless activity, he explored every nook and cranny of his neighbourhood, and acquired a knowledge of nature in her various moods and methods which was equalled by few and excelled by none of his compeers.—J. P. S.

EDMUND HENRY HANES.

With many regrets we have to record the loss of Mr. E. Hanes, who died of consumption, on February 23rd, at his home in Kentish Town, London, at the early age of 25. He was elected one of the Secretaries of the City of London Entomological and Natural History Society, in December, 1888, and continued to hold that office until illness necessitated his retirement, in the autumn of 1890. As an entomologist, he confined his attention solely to insects captured by himself, and did not exchange, but was always willing to give his surplus specimens to others. His last efforts were directed to breeding P. smaragdaria, in which he was successful.

Reports of Societies.

ENTOMOLOGICAL SOCIETY OF LONDON.

March 4th, 1891.—The Rt. Hon. Lord Walsingham, M.A., F.R.S., Vice-President, in the chair.

Mr. H. St. John Donisthorpe, Mr. F. W. Frohawk, Mr. Charles Fryer, Mr. G. F. Hampson, B. A., Mr. Frederick J. Hanbury, F.L.S., and Mr. G. B. Routledge, were admitted into the Society.

Mr. F. P. Pascoe exhibited, and made remarks on, a curious Coleopterous larva with a case somewhat resembling that of the Lepidopterous genus *Psyche*, which was found at the Theatre of Bacchus, Athens.

Mr. J. W. Douglas sent for exhibition specimens of *Icerya (Crossatosoma) ægyptiaca*, which, through the kindness of Mr. A. D. Michael, he had received from Alexandria on the 19th January last. It was stated that in travelling most of them had become loose, and had lost their waxen appendages; but a few still remained on their food-plant. In connection with this subject, Mr. G. H. Verrall alluded to a Dipterous parasite of *Icerya* from Adelaide—*Lestophonus iceryæ*, Williston—which had been bred from *Icerya Purchasi*, Mask., last February. Mr. M'Lachlan and Lord Walsingham continued the discussion.

Mr. R. Adkin exhibited a long and interesting series of *Triphæna orbona (comes)*, from various parts of the South of England, Yorkshire, Forres, the Isle of Man, the Isle of Lewis, and the North of Ireland.

Mr. G. F. Hampson exhibited a series of varieties of *Plotheia frontalis*, Walk., which was the only species in the genus, and confined to Ceylon. He said that the varied forms of this species had been described under twenty-one different names by Walker, Felder, and Moore.

Mr. F. Merrifield showed a number of specimens of *Selenia illustraria*, of three different stocks, proving that the spring brood of this species, which passed the winter in the pupal stage, was, like the summer pupa, materially affected in colouring by the temperature to which the pupa had been exposed in its later stages. He thought this fact, coupled with similar results ascertained with respect to the single-blooded *Ennomos autumnaria*, indicated that the operating cause was one of wide general application, and that valuable results might be looked for if entomologists would turn their attention to the subject. Capt. Elwes said that in his experience in many parts of the Palæarctic region, where there was a combination of heat and moisture, all the commoner species of Lepidoptera occurring in this country attained a larger size and a greater brilliancy of colouring than in colder and drier regions; and he referred to such species, amongst others, as *Pieris brassicæ* and *Argynnis paphia*. The discussion was continued by Mr. Jacoby, Mr. Fenn, and others.

Mr. W. H. B. Fletcher exhibited a long series of *Zygæna loniceræ* from York, and *Zygæna filipendulæ* from Shoreham, Sussex; also a series of hybrids obtained by crossing these two species. He stated that the eggs obtained from these hybrids were all infertile. Lord Walsingham said this latter fact was extremely interesting.

Mr. F. W. Frohawk exhibited a living specimen of an ichneumon which had just emerged from a chrysalis of *Papilio taunus*.

Mr. C. J. Gahan exhibited a number of species belonging to the genera *Lema* and *Diabrotica*, and read a paper on them, entitled "On mimetic resemblances between species of the Coleopterous genera *Lema* and *Diabrotica*." Lord Walsingham, Mr. Jacoby, Colonel Swinhoe, and Mr. Champion took part in the discussion which ensued.—H. Goss and W. W. FOWLER, *Hon. Secs.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

February 26th, 1891.—W. H. Tugwell, Esq., President, in the chair.

Mr. R. J. Anderson, of Suez, was elected a member.

Mr. Adye exhibited an unusually dark form of *Notodonta camelina*, with other forms of the same species. Mr. H. Moore, *Erebus odora* from South America. Mr. Turner, *Melanippe fluctuata*, taken at Brockley; the specimens showed considerable variation. Mr. Cockerell, *Heliothis armigera*, var. *umbrosa*, Grote., from Wet Mountain Valley, Colorado, larger than the type, the upper wings more or less olivaceous above, the under wings almost without markings below. Mr. Cockerell made some remarks on *Leucania unipuncta*, which he stated was a great scourge in America, and was there known as the Army worm. Mr. R. Adkin exhibited long series of the species of the genus *Triphæna*, Och., from many localities in the British Islands, together with Continental series of some of the species for comparison, and read notes dealing with the geographical distribution and general and local variation of the species exhibited. In dealing with *T. orbona (comes*, Hb.,*)* he pointed out Hubner's typical form, the varieties *adsequa* and *prosequa* of Treitschke, and *curtisii* of Newman, also Hubner's *consequa*, which he considered should be regarded as a form of this species rather than of *orbona*, Hub., to which it had hitherto been referred and supported his contention by specimens known to be forms of *comes*, Hb., which agreed with Hubner's figure of *consequa*. He also described the distinguishing characters of these varieties and gave notes on the nomenclature of the species. Several forms and varieties were exhibited by the members, and a discussion ensued—Messrs. South, Fenn, Tugwell, Adkin, and others, taking part. Mr. Cockerell showed, and read a note on, *Helix tridentata*, Say., type from Fayette Co., Indiana, and var. nov. *fuscula*, D. B. Cockerell (M.S.,) Toronta, Canada, collected by Mr. D. B. Cockerell.

12th March, 1891.—The President in the chair. Mr. F. E. Elton, of Wokinham, was elected a member.

The Secretary read the report of a Committee which had been appointed to enquire into the numerical and financial position of the Society, from which i appeared that since the year 1885 the number of members has increased yearly and as a consequence the finances of the Society.

Mr. R. Adkin exhibited *Pædisca solandriana*, bred from larvæ feeding in shoots of Birch from Aberdeen, and on behalf of Mr. Smith sundry Tortrices and Crambites from Paisley, including a white and dark blotched variety of *P. solandriana*, and an unusually white form of *Crambus pratellus*. Mr. R. South *Vanessa urticæ*, L., to show the geographical distribution and local variation. Mr. Adye, varieties of *Abraxas grossulariata*, L. Mr. Robinson, specimens of a *Pygæra* which he stated had been supposed to be *P. curtula*, they were bought cheap in 1876. Mr. Tugwell stated it was diffiurt to say what the species was if it was not *curtula*, he had seen the form before. Mr. Tutt remarked that he had seen the form in the Doubleday collection. Mr. Carrington exhibited, and made remarks upon some plants collected by him at Toulon. Mr. Cockerell read some notes on the variation of *Phasianella pullus*, L., and *Littorina rudis*, Mat., in South Wales, and on the minute shells obtained from the drift, collected by Mr. C. G. Barrett, in Pembrokeshire.

Mr. Billings read a paper on the Hymenopterous and Dipterous parasites, bred by members of the Society during the year 1889-90; the paper was illustrated by the exhibition of the various species mentioned in the paper, and in many cases by the host from which the parasites had been bred.—H. W. Barker, *Hon. Sec.*

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

March 5th, 1891.—Mr. Milton exhibited *Hybernia rupicapraria, leucophearia* and *E. autumnaria*, and in *Coleoptera*, *Dytiscus punctatatus*, *D. circumflexus*, *Pocadius ferrngineus*, *Salpinus castaneus*, *Hypoyhæus bicolor*, and *Mycetophagus 4-pustutalus*. Mr. Heasler, *Tetratoma fungorum*, and a specimen of *Dorcus parallelopipedus* taken on the 21st February, the usual time of appearance being June. Mr. Clark exhibited various British Bees and Wasps, and Mr. Battley to illustrate his paper, a glass case containing living bees, with their queen.

Mr. Battley read a paper on "The Honey Bee and modern Bee keeping." He remarked on the antiquity of Bee keeping. and the wasteful system practised of old. He described the various races of bees domesticated in Britain—the black bee *(Apis mellifica)* being taken as the type, and the Ligurian, Syrian, and Carniolian bees compared with it in marking and habits. All these races interbreed freely with each other, and the hybrids are fertile. He explained the structure of the comb, and showed that on the edges of the comb the cells were circular, and that the hexagonal form was the result of pressure of the other cells. He then gave an account of their life history. Workers are imperfect females, and attain the perfect state in 21 days from the deposition of the egg. The number of workers in one hive in the height of summer is about 25,000. Besides the ordinary work of the hive, they gather the honey and feed the larvæ. The drones or males require 24 days to mature, and only exist in the swarming season, when they are required to fertilize the young queens. If a queen be unimpregnated, from deformity or other cause, her eggs produce drones, and drones only. The products of the bee were referred to, the honey-sac, wax-pockets, pollen baskets, and sting. Persons stung by bees were recommended to extract the sting and avoid rubbing the part. The enemies of bees and their ailments were spoken of, and preventive methods suggested. He then described the appliances used in modern bee-keeping; the use of hives, frames, sections, smoker, extractors, wax foundation, &c., being illustrated by examples. He concluded by giving an explanation of the manipulations performed under the modern system.

A unanimous vote of thanks was accorded him for his interesting paper, on the motion of Mr. Milton, seconded by Dr. Buckell.—G. A. Lewcock & A. M. Battley, *Hon. Secs.*

(The report for 19th March had not reached us at time of going to press.)

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.

The Monthly Meeting was held on Monday, March 9th, the President, S. J. Capper, F.E.S., F.L.S., in the chair.

Mr. Brocton Tomlin was elected a member. Messrs. Collins, of Warrington, and Scowcroft, of Prestwich, were proposed for membership.

A paper by J. Herbert Stott was read on "A Parasite fungus forming its base in the larva of a New Zealand Lepidopteron," illustrated by specimens and drawings.

The Hon. Sec., F. N. Pierce, read a paper entitled "Notes on the Genital Armature of the genus *Miana*," in which he referred to the recent controversy respecting the distinctiveness of the two species—*M. strigilis* and *M. fasciuncula*, and proved, by the examination of the structure of the Genital Armature, that they were specifically different.

The paper, which appears in another part of this issue, was illustrated by the author's preparations thrown on a screen by the aid of the oxy-hydrogen micro-lantern, and exhibits of specimens from various parts of the country by the President and members.—F. N. Pierce, *Hon. Sec.*, 143, Smithdown Lane.

1 APR. 91
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EXCHANGE.—I should be glad to exchange rare vars. of H. nemoralis and hortensis with anyone who has paid special attention to these shells.—Rev. J. W. HORSLEY, Holy Trinity Vicarage, Woolwich.

DUPLICATES.—Fine Hyale, Latona, Acis Arion, Galatea (dark), Phlæas (dark), Virgaurea (all Swiss), Sybilla (British). DESIDERATA—Many Eupitheciæ and Noctuæ in fine condition.—T. MADDISON, South Bailey, Durham.

DUPLICATES.—*Petasites, Phragmitides.* DESIDERATA.—Genus *Boarmia, Tephrosia, Acidalia, Eupithecia,* and many others. Please send list of Duplicates.—JOSEPH COLLINS, Lilford-st, Warrington.

DUPLICATES.—Boreata, Monacha, and others. Desiderata.—many common species to renew.—A. E. HALL, Norbury, Sheffield.

I have Vol. I of Ent. Weekly Intelligencer in duplicate, it is in good condition and will exchange it for well got Lepidoptera. I would be glad to purchase or otherwise Entomologist Part 100, Vols. 2-5, and Ent. Annual for the years 1866-68 or 70 to end —A. E. HALL, Norbury, Sheffield.

American Lepidoptera. cocoons and chrysalides of same. American Birds' eggs, Indian relics snd fossils for Exotic Lepidoptera other than European. South American, African and Australian especially desired.—L. W. MENGALL, Reading, Pa., U.S.A.

DUPLICATES.—Fine bred specimens Turionana, Maritimana, Udana, Alpinana, Udana, Simpliciana, Badiana, Tanacetana, Atricapitana, Zephyrana, Francillana, Derasana, Leplastriana, Euphorbiana, Allisella, Conspicuella, Raskiella, Cricella, Alpella, Hepariella, Rhamniella, Schiffermillerella, Horridella, Hippophæella. Vilella, Eximia, Stettinella, Lantella, &c., lists exchanged.—G. ELISHA, 122, Shepherdess Walk, City Road, N.

DUPLICATES.—Ulmata, Tristata, Rurea, Chrysitis, Arcuosa, Affinitata, Decolorata, Neustria and ova. Desiderata very numerous.—W. BROOKS, The Gardens, Grange Hall, Rotherham.

DUPLICATES.—Davus, Tithonus, Blandina, Ulmata, Bipunctaria, Carpophaga, Farinalis, Bisitata. Desiderata. Many common species, pupæ preferred.— JOHN E. ROBSON, HARTLEPOOL.

DUPLICATES—Fulva, Fasciuncula, Furuncula, Arcuosa, Aprilina, Protea, Multistrigaria Albulata, Lariciata, Ocellata, Immanata, Cembræ, Lutealis, Trigonodactylus.—A. ADIE DALGLISH, 21 Princes st., Pollockshields, Glasgow.

DUPLICATES—Shells. S. corneum, A. anatina, N. fluviatilis, B. tenticulata, B. leachii, V. pscinalis, V. cristata, P. nitidus, P. vortex, P. contortus, P. hypnorum, P. fontinalis, L. glutinosa, L. truncatula, A. lacustris, S. putris, S. elegans, H. hortensis, H. arbustorum, H. cantiana, H. virgata, H. caperata, H, ericetorum, C. rugosa, &c. DESIDERATA—Other Shells or Natural History Specimens—J. W. BOULT, 17 Finsbury Grove, Fountain rd, Hull.

TO CORRESPONDENTS—Conchological Section. All communications for this section should be sent Mr. T. D. A. Cockerell. 3, Fairfax Road, Bedford Park, London, W., who will also name specimens and answer enquiries for any subscriber. Mr. G. A. Lewcock, 73, Oxford Road, Islington, N., Hon. Sec. City of London Ento. and Nat. Hist. Society, represents the Magazine in London, and conducts the section of Coleoptera. New subscribers can have such portions of the Supplements as appeared last year as follows: The British Hawk Moths, 24 pages, 6d; Hand-Book of British Spiders, 32 pages, 3 plates, 1s.; British Pterophori, 24 pages, 6d. Subscriptions, and all communications other than as above, to be sent to JOHN E. ROBSON, Hartlepool.

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CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY Albion Hall, London Wall. Meetings.—Thursdays, *April 2nd* and 16*th.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge, S.E. *Thursday, April 9th,* Paper "Papilionidæ."—Mr. S. Edwards, F.L.L. *Thursday, April 23rd,* Paper "Lichens." —Mr. E. Step. THE ANNUAL EXHIBITION will be held at the "Bridge House" Hotel, London Bridge, S.E., on Wednesday and Thursday, the 15th and 16th April; on Wednesday, it will be open from 7 till 10.30 p.m.; Thursday, from 1 till 10 p.m. Particulars and Tickets can be obtained of Hon. Sec., Mr. H. W. BARKER, 83, Brayards Rd., Peckham.

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MAY, 1891. *Part V.*

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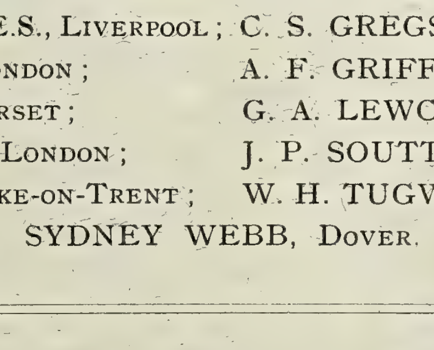

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Vertebrata.

"WHAT IS A BIRD?"

BY LINNÆUS GREENING.

(Continued from page 27.)

Having briefly considered the most important structural and functional resemblances between birds and reptiles, we may now proceed to show how birds have descended from reptiles, to try to realize how the feathered flying form has arisen from the scaled creeping one. The facts are enough to warrant us in asserting that this has happened, but how we can only conjecture. Having found in the Oolite strata fossils of true feathered birds, *Archæopteryx macrura*, which however, differ from existing birds in the structure of the tail, we are forced to assume that there must have been a long line of ancestors between these and the first small, four-legged, active, insectivorous, scaly tree lizard from which they were descended. Some of the descendants of this early tree lizard, which were of a more active disposition than their ancestor, would have a higher temperature, which would be accompanied by some modifications of structure and of the size and shape of the scales. It is clear that any tendency of the scaly coverings to become downy, would preserve, nay, would increase the warmth of the body, accompanied by still further modifications of the scales. This hypothesis is confirmed by a study of the development of a feather which in its earlier stages cannot be distinguished from a scale. In other words, up to a certain point of its growth a feather is exactly like a scale, but it subsequently becomes broken up and subdivided to an extent that renders it one of the most wonderful modifications which occur in the animal kingdom. Descendants of the first down covered reptiles would vary from the parental type as it had varied from its ancestral form. These varieties would be cumulative and would be accompanied, cumulatively, by increased activity, increased temperature, and increased modification of the down, with the result that in time there would be active, insectivorous tree-lizards, which, instead of being covered with scales would possess an epidermic covering, consisting at least in part, of simple feathers. It will be observed that I say simple feathers, because it is not certain that even *Archæopteryx* possessed feathers so highly specialized as those of existing birds, and as we have evidence that the early reptilian ancestors of birds were covered with simple feathers, we have the fact that chicks go through their first moult in the shell. These first feathers are long fine hair-like and barbless, and represent the early simple feathers which some of the tree-lizards were clothed with. What other explanation can be offered for the presence and loss of feathers which pass away before the chick leaves the shell. This embryonic moult is succeeded by the ordinary highly specialized feathers possessed by most existing birds.

It may be also mentioned that some birds possess spurs on their wings which are representatives of the claws of their reptilian ancestors; and in some species the young use their wings like legs for crawling. The most remarkable instance of this is the Hoatzin, whose young not only have claws on the pollex and index, but in some individuals those organs are opposable; in other words the young Hoatzin not only has what corresponds to our thumb and first finger, and to the homologous toes on the lizard's fore-feet, but it has claws at their extremities and it travels on all fours. In the adult the claws become mere warts, and the bird, though loth to rise, can fly well; but the fact that a young bird before it has got the power of flight uses its fore-limbs as legs is surely some evidence for the theory of descent from a feathered lizard; this habit is not confined to the Hoatzin, but has been observed in at least one group of British birds, the Grebes.

In speaking of the fore-limbs of birds, we are reminded of a feature in their skeletal structure which is characteristic of all existing birds. The metacarpal bones, homologous to those of the palm of the hand in man, are fused, but in the famous fossil birds *Archæopteryx macrura*, though in no other known species, these bones remain distinct as in reptiles. Moreover the three digits were in *Archæopteryx* armed with claws and these facts are of great interest since they point out clearly the close relationship of *Archæopteryx* to the reptilian form from which it had sprung. The interest of this fact is not lessoned by the knowledge revealed to us by embryology that all modern birds pass through a stage in their development similar to that which was permanent in *Archæopteryx*, *i.e.*, all embryo birds have the metacarpals free, but before the hatching takes place, the metacarpals become fused as in the adult bird. Having seen how a feathered arboreal reptile had arisen from the original scaly ancestor, it is not difficult to undertand that the more active ones, hopping about after their insect prey or gliding with outspread limbs from tree to tree, would vary in different directions ; those which continued to go on all fours would not have the hands and feet feathered ; the mere fact of using all four limbs for progression would prevent the growth of feathers on their under surfaces ; any tendency to an erect posture would mean that though there would be no feathers on the under surfaces of the hind limbs, those on the fore limbs would be well developed. It may be said that if there was as we have assumed a development of scales into feathers this should take place all over the body, to this we must reply that as in mammals the palms of the hands and the soles of the feet are devoid of hair, we may justly assume that in feathered animals, parts similar both in structure and function would be devoid of feathers. Any tendency to an erect attitude accompanied by disuse of the fore-limbs, as organs of progression or prehension, would mean the growth on them, as on other parts of the body, of feathers; and as the animal hopped about, or sprang from bough to bough, using its outstretched fore-limbs as balancers, any variation in the direction of greater length of the feathers of the fore-limb would be advantageous and would tend to be preserved and accentuated. It must be noted, in support of the erect posture and hopping theory, that no bird commences to fly without first springing upwards, this applies even to sea-birds, and we all know that swifts cannot rise from the ground except against a strong wind, and even then only with difficulty.

The well developed feathered fore-limbs which were most effective as balancers, could be used as organs of flight, and since there is reason to believe that at first flight was irregular and spasmodic, we need not doubt that as increased structural modifications and increased functional activity had so far marked the development of reptiles in an ornithic direction, so those individuals which possessed the power of even irregular flight in a somewhat greater measure than their contemporaries, would be able to get a greater variety and quantity of food as well as possessing an advantage in securing the most vigorous females, and thus in these various ways tending to preserve and accentuate their ornithic development. Arguing by analogy we may say, paradoxical though it sound, that the first bird was a male, for just as throughout the whole animal kingdom we find the principles of anabolism and katabolism associated with the female and male sexes and habits respectively, just as we find the males comparatively active and the females passive, so we are justified in supposing that the same law held good in the past, and that the first true flying feathered reptile or bird was a male.

(To be continued.)

Arachnida.

Spider Notes.

New Spiders.—It is possible that some of your readers who may take some interest in spider lore may be glad to hear something of what has been done in arachnology during the past year.

Several fine additions have been made to the British list, which numbers now close upon 530 species. A very fine species of wheel-web spiders—*Epeira regia*, C.K., closely allied to *E. angulata*, Clk., of the female sex—was taken near Exeter, sitting in the centre of its large web on the furze bushes; and a fine species of *Tegenaria—T. larva*, Sim., has been received from Ireland. Amongst the smaller sized spiders, a *Tmeticus—T. nigar*, F.Cb., new to science, and another pretty, little, very distinct spider, *Leptyphantes (Linyphia) pinicola*, Sim., were captured by the writer up on Mount Helvellyn.

There are some other additions to the British list beside these, of which descriptions will be published in due course. The two Helvellyn captures have been figured and described, together with several other obscure species, in "Ann. Mag. Nat. Hist." for Jan., 1891.

In a future number I shall hope to have something to say about some rarer species of British spiders which have been taken during the past year.

Of new books which have appeared, an American work by Dr. McCook, of Philadelphia, occupies the first place from a *popular* point of view. It is beautifully illustrated, and contains an amazing amount of valuable information, new and old, on the habits of spiders. A small but very valuable contribution to our knowledge of the spinning glands of *Epeira diademata*, Bl., has been made by Mr. Cecil Warburton, of Christ's College, Cambridge; and the *modus operandi* of line spinning—a matter very difficult to investigate—has been cleverly dealt with.

Soon we shall hope to be able to record many rare and some new species of spiders, which will doubtless be "turned up" by the now gradually increasing body of naturalists who are beginning to take up claims in this hitherto almost unnoticed gold mine.

It will be seen from the above record, which is not a complete one, that many rich nuggets await a careful panning-out and patient search by zealous workers.—F.O.P.C., Carlisle, Jan. 26th, 1891.

Insecta.

LIST OF THE LEPIDOPTERA OF ABERDEENSHIRE AND KINCARDINESHIRE.

BY WM. REID, PITCAPLE.

Chelonia Plantaginis.—On all moors where I have collected, but generally rather scarce, they have been captured at 2000 feet elevation.

Chelonia Plantaginis, var. Hospita.—Forest of Birse, Aboyne, and Braemar, but always scarce.

Chelonia Caja.—Common everywhere, specimens with the red parts replaced with yellow, have now and then been bred, and I have one with the anterior wings almost black, I have also bred several with the wings all black, but they were malformed.

Arctia Fuliginosa.—Common everywhere, smaller and darker than English specimens.

Arctia Menthastri.—Formerly abundant, has been getting scarcer lately, spots elongated, and ground colour buffish.

Arctia Mendica.—Two were caught by Mr. Sim, near Cove in 1873.

Liparis Auriflua.—Once in Aberdeen (Trail).

Liparis Salicis.—Occasionally near Aberdeen, and once at Peterhead ; Inverurie, and Pitcaple.

Orgyia Fascelina.—On all moors, but rather scarce, larvæ met with more frequently.

Orgyia Antiqua.—Common everywhere, larvæ often abundant.

Demas Coryli.—Common, larvæ abundant, ♂'s can be attracted by a newly bred ♀ after dusk.

Trichiura Cratægi.—Larvæ common on the moor, Mr. Horne has turned up this species in some abundance, the larvæ hybernates the first winter, and takes two years to feed up.

Pœcilocampa Populi.—Scarce, Inverurie, Pitcaple and Fyvie. I have recently taken the larvæ in some numbers near Pitcaple, the imagines are not so often seen.

Eriogaster Lanestris.—Not rare at Pitcaple (introduced) the larvæ literally swarmed on a hawthorn hedge last year (1890) parents came originally from Essex.

Bombyx Rubi.—Larvæ abundant on waste ground, imagines also common.

Bombyx Callunæ.—Used to be our commonest Bombyx, now rather scarce. A few years ago the larvæ were attacked with a kind of dropsical disease, which killed them in hundreds. The Black Headed Gull has also lately paid much attention to the imagines, and in consequence the species has been gradually becoming scarcer. Larva hybernates the first winter, and the pupa the second.

Odonestis Potatoria.—One taken on Murcal links many years ago (Prof. Trail's Lepidoptera of Dee).

Endromis Versicolor.—Very scarce at Tarland and near Banchory.

Saturnia Carpini.—Common on all moors, emerges in June and July, and often remains two years in pupa.

GEOMETRÆ.

Epione Apiciaria.—Mr. Tait used to take this species about Moneymusk, it has also been taken at Fyvie.

Rumia Cratægata.—Abundant everywhere, second brood very scarce.

Metrocampa Margaritaria.—Common everywhere.

Ellopia Fasciaria.—Locally common in fir woods. The green variety has been bred occasionally.

Selenia Illunaria.—Generally common, appears in May and June, not double brooded.

Selenia Lunaria.—Rather local, but not rare, a dwarf variety has recently been turned up near Pitcaple.

NOTES FOR BEGINNERS.—MICRO LARVÆ FOR THE MONTH.

BY GEO. ELISHA, F.E.S.

The genial month of May is, without doubt, the busiest of all for larvæ, and we must now at every opportunity get away to the fields and lanes, woods and marshes, searching diligently for the larvæ of some of those species that are as yet undescribed, not forgetting as we stroll along to take a supply of all those we have not yet bred or become acquainted with, for we must bear in mind that although larvæ may be plentiful in any particular spot one season, we must not expect to find them so always. It is well then to take a supply when the opportunity occurs, for they may turn out a very local or rare species, and the advice that has been so often given with regard to the imago, viz.: take your series while you can, applies with equal force to the larvæ, for there are some species the larvæ of which are found in abundance one year, then suddenly disappear and are seen no more for several years to come; and again, bred specimens of even the commonest species are preferable to caught ones, and insects for the cabinet should always be in the finest possible condition, and well set, notwithstanding that some recent writers affect a sneer about well set specimens with perfect fringes. It is far easier to examine and name a fine, bred, well set specimen with perfect fringes, than a dilapidated, badly set one, with imperfect fringes, and the perfect one serves its purpose, from a scientific point of view, very much better; and again, all those who are working to elucidate the life history of any of the species whose early stages are as yet unknown, are doing good scientific work in publishing their experiences, and thus helping to complete our knowledge of the whole of the British fauna.

And now we will give our attention to some of the larvæ that are best taken this month, and to that end will take a walk into the country, selecting for our ramble the most unfrequented lanes and paths skirting meadows and cultivated fields; but it hardly matters where we go—larvæ now are to be found everywhere, and it often happens a more satisfactory bag is obtained at certain times of the year, by searching neglected or waste pieces of land comparatively close at home, than by travelling many miles to some well-known locality.

As we pass along, the stitchwort again attracts our attention, for now the seed pods are hanging in abundance, and some of them have a faded appearance. If on opening one of these pods we find a yellowish larva with black head, it would be the larva of *Gelechia maculea*. It is best to cut a good bundle of the plant, putting the ends in water on arriving home, and in due time a good series will be bred. A little further on we notice the shoots of the spindle tree *(Euonymus europæus)*, some of which are drooping and withering; this is caused by the young larvæ of *T. plumbellus* at work within the stem, which they afterwards leave and feed externally on the leaves, under a slight web. The dense web also of *T. cognatellus* on the same plant cannot fail to attract attention, for these feed gregariously, spinning an immense amount of web, into which they retreat on the slightest alarm, and they are so plentiful some seasons that the spindle trees are completely defoliated by them. The buckthorn *(Rhamnus frangula)* growing in hedges, have at this time some of the shoots drooping in a similar manner, by the larvæ of *Laverna rhamniella* feeding inside the stem; afterwards feeding externally; they are of a brown colour with black head. The flea-bane *(Inula dysenterica)* growing in the wet places by the roadside next causes us to stop and cut some of the drawn-together tops, for we know that the larvæ of *Ebulea crocealis* is now feeding up rapidly, and on its leaves the long, whitish cases of *Coleophora troglodytella* is now to be found. The sharp thorns of the bramble cause us to turn, and then we notice how some of the shoots are drawn together almost into a complete ball by the larvæ of *A. udmanniana*. A little further on we see the shoots of the sun cistus *(Helianthemum vulgare)* drawn together in a similar manner by the larvæ of *Gelechia sequax*.

And now we will cross the heathy common on our way to the wood beyond, examining the flowers of the furze as we go, for we want a few larvæ of *Gelechia mulinella;* these larvæ are pale green with black head, and are soon found by the round holes in the half-opened buds. On the isolated oak trees we find the curious pistol-shaped cases—with a large scaly flap on each side—of the larvæ of *Coleophora palliatella* making conspicuous blotches on the leaves, and occasionally the small, pistol-shaped cases of *C. ardeæpennella*, but never commonly; and by beating the branches into an umbrella or net we can soon obtain a goodly number of the dull-green but lively larvæ of *H.*

radiatella, from which a most variable series may be bred. On the neighbouring birch trees the larvæ of *Coleophora ibipennella*, in their pistol-shaped cases, which lie nearly prostrate on the leaves, are betrayed by their manner of feeding. We must now use our sweeping-net for the two heath-feeding *Coleophora* which are best obtained this month, so we will make for one of the many deep hollows where the heath is more luxuriant and protected from the winds, and are soon rewarded by finding in the net some of the long, black, curved cases of the larvæ of *Coleophora pyrhulipennella*. The debris which we have swept from the heath must be put into a bag and taken home, for the cases of *C. juncicolella* are among it in plenty; but they are very small, and so exactly resemble a broken shoot of the heath that it is impossible to separate them, but by putting all the sweepings into a shallow box or tea tray in a thin layer, and covering with a piece of wet muslin, the *Coleophora* in the course of a few hours will have crawled on to the muslin, and can then be easily separated. The bleached appearance of the *Genista anglica* next claims our attention, and we are soon taking a supply of the case-bearing larvæ of *Coleophora genisticolella*, for they are rather a local species.

We will now make for the wood, but we must pause to collect a few shoots of *Artemisia vulgaris* from some old plants growing on the edge of the pathway, for they contain the larvæ of *P. linigianus*, and the drooping shoots of the *Hypericum*, containing the larvæ of *D. hypericella*, induces us to fill a small bag, for we want a fresh series; and now proceeding through the wood by the main path, we notice the larch trees are still being bleached by the larvæ of *C. laricella*, and our attention is soon arrested by the conspicuous, black, pistol-shaped cases of *C. vibicella* on the *Genista tinctoria* growing by the sides of the drive, some of which we must take, for the species is extremely local, and while busy searching the *Genista* for these cases, we notice the terminal shoots of some are drawn together; if on opening them we find a pale-green larva with black head, we may conclude they are the larvæ of *G. lentiginasella*. We next examine the drawn-together shoots of honeysuckle, and are soon rewarded by finding the lively black larva, with distinct white stripe on each side, of *G. mouffetella*. The handsome reddish-brown striped larvæ of *C. xylostella* is only too common on the same plant, while the velvety-looking, oblique marked larva of *C. nemorella* is more rarely met with at the same time. The large-leaved sallow *(Salix caprea)* must be examined now, for the topmost shoots nourish the bright-green larvæ of *P. capreana*, and in the shoots of Scotch fir the larva of *R. buolinana* is also to be found in plenty.

In the shady parts of the wood, the Betony *(Stachys betonica)*, which is now growing freely, soon makes us pause to examine the blotches on some of the leaves, and there, sure enough, is the long cases slightly curved at the end, of the larva of *C. Wockeella*. On the Broom the larva *C. saturatella* in their short stumpy looking cases are now getting full grown, while under the bark, the larva of *Cemiostoma spartifoliella* are still making their long narrow mines, but which they will now soon quit, to spin their white cocoons in the buds or angles of the twigs. In the damp shady parts of the wood where the *Epilobium angustifolium* is growing freely, we shall now find the larva of *Laverna conturbatella* in the drawn together tops. We will now retrace our steps, examining the elms in hedges, and taking a supply of the large flat serrated cases of the larva of *C. limosipennella*, and the short smooth cases of *C. badiipennella* which are are found on the same trees, and in the shoots of holly the larva of *Grap. nævana* can now be had commonly.

By the above, which is only a portion of what can be done this month, it will be seen there is plenty to do, never forgetting that our main object is to work out the life history of those larva as yet unknown, and doing all we can towards that object, for as time goes on, we become more and more impressed with how little we know, and what a deal there is yet to learn.—GEO. ELISHA, Shepherdess Walk, City Road, N.

Mollusca.

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"The Conchologist," a Quarterly Magazine for Conchologists. Edited by W. E. Collinge. No. 1, March 25th, 1891.

This new magazine is nicely printed, and the first number contains some interesting articles. The Rev. Carleton Greene gives a list of the Marine Shells of North Wales, enumerating 136 species. He gives four localities for *Donax trunculus* ; but surely these must be *D.*

vittatus, which he only records doubtfully from Barmouth? The present writer has seen *Donax vittatus* from Llandudno, collected by the Rev. H. Friend. Mr. Friend also sent from Llandudno specimens of *Littorina obtusata*, two of which were referable to the yellow form *lutea*, and seven to the olivaceous form of the species; and a specimen of *Cyprœa annulus*—this latter of course accidentally conveyed there by some means, and in no way belonging to the fauna of North Wales! Mr. Lowe's paper on "Slugs and Frost" is of special value in relation to the often-discussed question of the effect of hard winters on various forms of life. Mr. Collinge, on pp. 9-10, gives the synonymy of the so-called *Limax arborum* and *Amalia marginata;* and on pp. 11-14 he begins what promises to be a very interesting list of the Mollusca of Oxfordshire. The *Limax variegatus*, var. *lineolatus*, Collinge, from its dark lines and yellowish tentacles, seems much more like *L. marginatus*, var. *nemorosus*, Baudon, than any variety of *L. flavus (variegatus);* but Mr. Collinge writes us—"I have not the *slightest doubt* as to the specimens being *flavus*." *L. marginatus*, var. *nemorosus*, is not quoted by Mr. Collinge from Oxfordshire; but there are three examples of it in the British Museum from near Oxford *(A. M. Norman)*, together with a young *L. cinereoniger*, form *verus*, Dum. and Mort., which is also new to the Oxfordshire list. On pp. 10-11 eight species of mollusca are recorded as new for S. Lancashire, but all of them have been recorded either in Mr. Standen's list in the "Naturalist" (1887), or in Mr. J. C. Melvill's Manchester list, which was published as a pamphlet on the occasion of the meeting of the British Association there. Similarly, *Cœcilianella acicula*, supposed on p. 16 to be new for West Kent, has been found at Chislehurst (S. C. Cockerell), and if we remember right, recorded in the "Zoologist" for 1885. The Bibliography, as given on p. 15, will be very useful.—T.D.A.C.

Notes.

In the "Scottish Naturalist" for April, Mr. Thomas Scott figures and describes a supposed new species of *Vertigo* from the post-tertiary marl at Kirkland, Leven, Scotland, which he proposes to call *V. concinna*. It is allied to *V. pygmœa*, but differs in being without apertural lamellæ, and in other respects.

Mr. R. B. Newton, in the "Annals and Mag. of Nat. Hist." for April, has a paper on the use of the name *Cyclostoma.* It seems that the term *Cyclostoma* was first applied by Lamarck (1779) to what we now call *Scalaria ;* but *Scala* is the earliest name for that genus (as had been previously pointed out by Dall—" Bull. Mus. Comp. Zool.," XVII., p. 299), and *Cyclostoma*, 1799, its synonym. The next use of *Cyclostoma* was also by Lamarck (1801) for what he afterwards called *Delphinula.* Mr. Newton drops *Cyclostoma* altogether, and still writes *Delphinula* (1803) for this genus, though according to strict priority we ought apparently to write *Cyclostoma delphinus* (L.)[*]

Now coming to the *Cyclostoma* of all modern authors, we find that it was first called *Pomatias* by Studer, in 1789, with our *Cyclostoma elegans* for the type ! Mr. Newton adopts *Pomatias* for *Cyclostoma*, and proposes that the name of the family *Cyclostomatidæ* be changed to *Pomatiidæ.*

Finally, we find that the *Pomatias* of Hartmann and all authors is said to be without a name, and it is accordingly called *Hartmannia*, R. B. Newton.

There is, however, a sub-genus called *Cardiostoma* by Sandberger, founded on a fossil species from the Eocene, which is supposed to fall under *Pomatias* of authors. Possibly there are good reasons for considering it distinct, but failing such, *Cardiostoma*, Sand. (1874), ought to be used for *Pomatias*, Anctt., instead of *Hartmannia. Hartmannia*, as a generic title, has been twice used in botany, but *Hartmannia*, Spach., is but a section of *Œnothera*, while *Hartmannia*, D.C., is considered identical *Hemizonia.*

Anotus, Westerlund, is the first of four names proposed for sections of the genius *Pomatias*, Auctt., in 1883 ; but whether such names could be used in a generic sense is perhaps doubtful. *P. patulus*, Drp., falls in sect. *Auritus*, Wst.

Limnœa palustris, var. *nana*, of the " Brit. Nat. Cat." (=*minor*, Taylor, preocc.) seems to be practically identical with the var. *minima* of Baudon. This latter name will have to be used instead of *nana.*

In the "Journ. of Conch." 1889, p. 63, a small species of *Pupa* from Colorado was named *P. coloradensis*, but not described. It is a distinct species, allied to *corpulenta*, but decidedly smaller (length 1½ mill.,) more striate and slightly narrower. There are four apertural lamellæ, one on the parietal wall, one on the columella, and two—the lower one the largest—on the outer wall.

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[*] There is a genus of fishes named *Cyclostoma*, Nilss., but this is of later date (1832).

Pupa ingersolli, Ancey M.S., mentioned on p. 64 of the same volume, has also never been described. It is allied to *coloradensis*, but 2 mill. long, cylindrical, dull-brown, with half a whorl more, and a double lamella on the parietal wall. *P. montanella*, indicated on the same page as *P. coloradensis*, proves to be a form of *P. pentodon*.

While recently in Dorsetshire, the writer found specimens of an *Arion* which is evidently referable to *A. ambiguus* of Pollonera, a species not hitherto recognised as British. Examples found at Sturminster Marshall, belong to the var. *armoricana* Poll.; and a single individual from Bailey Gate, found by Mr. W. Wallace, represents a new form *subalbida* Ckll., having the sole and sides below the bands creamy white, in strong contrast to the dark back, somewhat after the manner of *A.empiricorum* var. *albolateralis* (Roeb.) *A. ambiguus* is perhaps only a variety or subspecies of *A. bourguignati*, from which it differs in its lack of a keel or pale dorsal line, and in the slightly yellowish tint of the sole, especially at the sides. It is perhaps not unlikely that *A. circumscriptus* was founded on *A. ambiguus*, rather than *bourguignati* proper.—T.D.A.C.

Reports of Societies.

ENTOMOLOGICAL SOCIETY OF LONDON.

April 1st, 1891.—Professor R. Meldola, F.R.S., Vice-President, in the chair.

Mr. G. A. Booth, of Grange-over-Sands, North Lancashire; and Mr. W. Manger, of New Cross, S.E., were elected Fellows of the Society.

Capt. H. J. Elwes showed a small but very interesting collection of butterflies from Laggan Alberta N.W. Territory of Canada, taken by Mr. Bean at high elevations in the Rocky Mountains. Amongst them were *Colias elis*, Streck., which seemed to be very close to, if not identical with, *C. hecla* of Europe, *Argynnis alberta*, W. H. Edw., and *Chionobas subhyalina*, W. H. Edw. The resemblance between the butterflies of this locality and those found on the Fells of Lapland was very striking some of the species being identical, and others very closely allied. Capt. Elwes said that it was another proof, if one were wanted, of the uniformity of the butterflies found throughout the boreal region in the Old and New Worlds.

Mr. G. C. Champion exhibited several insects recently received from Mr. J. J. Walker, from Hobart, Tasmania. The collection included a curious species of *Forficulidæ*, with asymmetrical forceps, from the summit of Mount Wellington; two mimetic species of *Œdemeridæ* belonging to the genus *Pseudolycus*, Guér., and the corresponding *Lycidæ*, which were found with them; also specimens of both sexes of *Lamprima rutilans*, Er.

Mr. N. M. Richardson exhibited a specimen of *Zygæna filipendulæ* with five wings; a second specimen of the same species with the middle legs on the right side much dwarfed; four specimens of *Gelechia ocellatella*, including a pink variety, bred from *Beta maritima;* four specimens of *Tinea subtilella*, a species new to Britain, taken last August in the Isle of Portland; also specimens of *Nepticula auromarginella*, a species new to Britain, bred from larvæ taken near Weymouth on bramble. Dr. Sharp and Mr. M'Lachlan commented on the structural peculiarities of the two specimens of *Zygæna*.

Mr. C. Fenn exhibited a series of *Tæniocampa instabilis*, which had been bred out of doors during the recent severe weather. They were all bred from ova laid by the same female, and many of them were of an abnormally pale colour. Mr. Fenn said that, according to Mr. Merrifield's theory, these pale specimens, in consequence of the temperature to which they had been subjected in the pupal state, ought to have been very dark. Mr. Jenner Weir, referring to the pale specimens, said he had never before seen any of so light a colour.

Mr. W. Dannatt exhibited a butterfly belonging to the genus *Crenus*, recently received from the Lower Congo. He said he believed the species was undescribed.

Mr. G. A. J. Rothney sent for exhibition several specimens of an ant *(Sima rufonigra)*, from Bengal, together with specimens of a small sand wasp (*Rhinopsis ruficornis)* and a spider *(Salticus)*, both of which closely mimicked the ant. It was stated that all the specimens exhibited had lately been received from Mr. R. C. Wroughton, Conservator of Forests, Poona. Mr. Rothney also communicated a short paper on the subject of these ants and the mimicking sand wasps and spiders, entitled "Further notes on Indian Ants."

Mr. G. C. Champion read a paper entitled "A list of the Heteromerous Coleoptera collected by Mr. J. J. Walker, R.N., in the neighbourhood of Gibraltar, with descriptions of four new species." At the conclusion of the meeting a discussion ensued, in which Mr. Kirby, Capt. Elwes, Mr. M'Lachlan, Mr. Jenner Weir, Dr. Sharp, and Mr. Crowley took part.—H. Goss, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

March 26th, 1891.—W. H. Tugwell, Esq., President, in the chair.

Mr. Skinner, of Putney, was elected a member.

Mr. C. Fenn exhibited a long series of *Tæniocampa instabilis*, bred from ova obtained from a female at Lee, Kent, and remarked that the forms were mostly of a very pale grey or brownish tints, banded with dark grey and purple, and showed a strong tendency towards the form of the female; out of nearly 100 that were bred, two-thirds followed the type; the pupæ had been exposed to the intense frost of the winter, and the moths emerged within a fortnight after the frost breaking up, and in his opinion the preponderence of the pale forms did not corroborate Mr. Merrifield's idea that cold darkened the colour; the black form of the species occurred at Lee. Mr. Tugwell, referring to Mr. Fenn's exhibit, expressed on opinion that a brood did not always follow the form of the parent moth, and instanced *Acidalia aversata*, where he said he had bred forms entirely different from the female; but in reply to Mr. South, added that he did not see the male parent. Mr. South remarked that in breeding lepidoptera he invariably found the brood followed either the male or female parent. Mr. Mansbridge showed a melanic specimen of *Phigalia pilosaria*. Mr. South then referred to the supposed variety of *Pygæra curtula* exhibited at a previous meeting by Mr. A. Robinson, and remarked that an analogous variety of *P. reclusa* had been figured by Stephens, and recorded by M. Whittich.

An exhibition of microscopical exhibits was then given by members.

April 9th, 1891.—The President in the chair.

Mr. A. H. Hamm, of Reading, was elected a member.

Mr. H. Moore exhibited *Caligo nemnon* from S. America, and *Metapodius sericollis* from Trinidad. Mr. South, three varieties of *Miana strigilis*, Clerck., which were extraordinary forms of the variety *latruncula*, and were received from Mr. Jeffreys, of Clevedon. Mr. R. Adkin, *Pædisca sordidana* from Forres, and stated that these were very unlike the specimens from N. Devon.

Mr. Cockerell read a note on variation, and some discussion followed.

Mr. S. Edwards contributed a paper on the Papilionidæ.

The ANNUAL EXHIBITION was held on the 15th and 16th April, at the "Bridge House," London Bridge, S.E., and was more successful than any previous exhibition. It included representatives of all groups of the animal and vegetable kingdom. Among the exhibitors were Mr. Dawes with animals and birds, among the latter being a case of Kingfishers, showing the nest; Messrs. J. and W. Davis, H. J. Turner, D. J. Rice, H. McArthur, H. T. Dobson, B W. Adkin, C. H. Collins, G. B. Ashmead, and J. Henderson, exhibiting birds, birds' nests and eggs. Mr. Henderson's exhibit was confined to varieties of eggs of the Puffin and the Kittiwake Gull. Mr. Ashmead showing a magnificent case of eighteen species of Birds of Paradise. Mr. A. E. Cooke, two albino moles from Essex. The St. John's Wood Piscatorial Society, Messrs. Williams & Co., and T. H. Briggs, specimen fish. Mr. W. Conisbee, a collection of some hundreds of marine and land shells. Miss Billups, British land and fresh-water shells. Mr. J. T. Carrington, land shells from the Riviera, collected by him during the winter of 1890. Mr. S. Robinson, shells, including specimens of oysters with whelk shells attached. Mr. Lovett, a collection of Stalk-eyed Crustacea.

Bees, bee-hives, and bee-keeping appliances, were exhibited by Messrs. Geo. Neighbour & Son. A magnificent collection of nests of British end Foreign wasps by Mr. H. Moore and Mr. E Cook. Mr. Billups showing Hymenoptera, Heterogyna, and Fossorial Hymenoptera, following in their natural order; British Coleoptera, showing most of the known families; Diptera, Hemiptera, Homoptera. Among Mr. Billups exhibits were three drawers showing the life histories of various species of Lepidoptera with the parasites, both Hymenopterous and Dipterous, many of which are new to Britain, and in some cases new to science. The majority of these parasites were reared by members of the Society during the past four years. Mr. Lewcock and Mr. Goodman, cases of Coleoptera. Mr. W. Manger, Exotic Coleoptera, &c. Mr.

Mr. R. McLachlan, British Trichoptera or Caddis flies, with cases of the larvæ. Mr. W. West, Homoptera collected 1890. The most interesting exhibits among the Lepidoptera were those of Mr Tugwell who showed the Sphingidæ, including fine varieties of *Deilephila galii*, and *Chœrocampa porcellus;* the Bombyces, series of varieties of *Spilosoma lubricipeda*, *S. menthastri* and *Arctia caja*. Mr South, the Pieridæ showing considerable variation among the different species; varied series of *Boarmia repandata*, and *Cidaria russata*; the genus *Dianthœcia*, also a small collection of Tineæ arranged in a new, and as suggested, more convenient manner, viz: the species being arranged side by side in series of about half-a-dozen. Mr McArthur a small case illustrating the life-history of *Pachnobia alpina* and cases of Exotic Lepidoptera. Mr J. H. Leech, a large collection of Palæartic species including the *Papilionidæ*, *Sphingidæ* and the genus *Arctia*. Mr Gregson a most interesting case of *Abraxas grossulariata*. A collection of Canadian species made and presented to the Society by Messrs A. & L. Gibb, and which had been arranged by the Curator, Mr West, were shewn by the Society. Life histories of many species were exhibited by Mr C. H. Williams, Mr Short, Mr A. J. Croker; (Mr Williams also exhibited his captured *D. galii*, in marked contrast to Mr Tugwell's bred series;) *Phorodesma smaragdaria* and *Miana strigilis*, being especially noticeable; Mr Quail, whose specimens mounted on the natural food plant were much admired. Mr Sydney Webb, long series of *Vanessa urticæ*, and *Abraxas grossulariata*. Mr Hawes, varieties of Rhopalocera, and a long series of *Hesperia lineola*, including the three specimens taken in 1888 from which the species was identified. Mr T. W. Hall, varieties of *Noctuæ*. Mr J. R. Wellman his magnificent collection of *Plusidæ* and *Acidalidæ*. Mr J. T. Williams lang series of many rare species. Professor Stuart, examples of mimicry among Lepidoptera and a case showing secondary sexual characters. Mr. C. B. Smith, five series of the genus *Argynnis*. Mr. R. Adkin, the British Butterflies geographically arranged in order to show local variation, also long series of the genus *Triphæna*. Mr S. J. Capper, a fine lot of varieties and typical forms of *Cœnonympha davus*. Mr C. A. Briggs, long and varied series of the *Pieridæ* and other groups. Mr C. Fenn, varieties of *Tæniocampa instabilis*, and examples of Tortrices. Mr A. H. Jones, scarce British Noctuæ. Mr Tutt, his collection of the genus *Agrotis*. Messrs. Nussey. Collings, Joy, Barber, and many others, exhibited British Lepidoptera; while fine exhibits of Exotic species were made by Mr Jenner Weir and Mr S. Edwards.

Mr Mosley contributed an interesting collection of insects injurious to Agriculture. Botanical exhibits were made by Mr E. Step. British lichens and mosses, Miss Billups, Miss Adkin, Messrs A. L. Clark and C. S. Cooper. Minerals and sections of rocks by Mr Russell, and Mr M. Winkley exhibited a collection of Queensland opals, showing fossil bones, shells, &c., opalised, the whole of which were collected by Mr T. C. Wollaston.

Microscopic exhibits were made by the following gentlemen:—Messrs. H. J. Turner, A. J. Croker, F.E.S., T. R. Billups, F.E.S., R. Adkin, F.E.S., E. Hinton, E. Dadswell, F. Coles, R. Macer, F.R.M.S., T. D. Ersser, A. L. Corbett, H. G. Coombs, C. S. Bouttell, J. T. Holder, H. Groves, W. West, L.D.S., W. B. Medland, F. Reeve. W. Gregory & Co., F. Enock, C. H. Oakden, and C. S Cooper.

One of the most noticeable features of the Exhibition was a named collection o living Mollusca made by Mr E. Step, in the neighbourhood of London

In a separate room Mr Henry Burns, F.E.S., exhibited pond life, the enlarged image of the living object being thrown upon a screen by aid of a lantern.

On each evening lectures were given, illustrated by the aid of micro-photographic slides shewn by the oxy-hydrogen lantern

Mr F. Enock, F.E.S., lecturing on "The wonders of Insect Life, as exemplified in the life-history of the Hessian Fly." Mr George Day, F.R.M.S., lecturing on "A walk by the Sea Shore."

Mr George Smith, of the Sciopticon Company, also gave an exhibition of Micro-photographs, principally of Foraminifera.

During the Exhibition a selection of music was played by the Misses Tugwell, E. Wenborn, May Cole. G.S.M., Lucy Willcocks, and Lottie Sharp.—H. W. BARKER *Hon. Sec.*

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

Thursday 19*th March*, 1891.—Mr. J. A. Clark, President, in the chair. Mr. Hollis exhibited a bred series of *O. potatoria*, some of the ♀'s being very dark, and a long series of var's of *Teras contaminana*. Mr. Battley, *H. leucophearia*, *P. pilosaria*, *N. hispidaria*, &c., all from Richmond Park, also four specimens of *S. tliæ* bred this spring in a greenhouse. He pointed out that they were very light in colour, and almost without the pink tinge usual in this species. Mr. Clark exhibited a series of the same insect showing a perfect gradation from the unspotted form to one with a complete band, several of them differing on each side; also a large box of Forres and Shetland lepidoptera, including a black *L. cæsiata*, *H. humuli*, var. *hethlandica*, melanic *N. glareosa*, *P. alpina*, and *N. festiva*, var. *thulei* dark *L. monacha*, and a dwarf *A. litura*. Mr. Hodges, a long series of pale forms *L. testacea*, from the Isle of Wight. Mr. Tutt a var. of this species taken by Mr. Baxter at St. Annes on the Sea. He pointed out that some of those exhibited by Mr. Hodges were very similar to this specimen, which did not agree with Freyers description of *L. nickerlii*. Mr. Sampson a series of *E. lanestris* and *S. illunaria*. Coleoptera: Mr. Milton *D. obscurus*, *Æ. lurida*, *C. gœttingensis*, *lamina*, *D. sagittaræ* and *dentipes*, all from Needham Market. Mr. Heasler *C. marginellus*, and *P. melanocephalus*, taken by digging in the banks of streams at Mitcham. Mr. Cripps *L. multipunctum* from the same locality.

April 2nd, 1891.—Exhibits: Lepidoptera. Mr. Smith, *N. hispidaria*, from West Wickham. Mr. Battley bred *E. lucipara* from larvæ taken at Stamford Hill, which varied in the width of the central band and the intensity of the black and yellow sub-marginal lines. Mr. Hodges, pale *A. promutata* from the Isle of Wight, and for comparison, specimens from Portland and elsewhere. Mr. Prout, a variable series of *B. glandifera* from Sandown. Coleoptera: Mr. Heasler, a specimen of *A. emarginatus* from Loughton. The Secretary read a paper by Mr. E. Anderson, late Secretary of the Society, entitled, "A trip to Corranwarrabool," giving a graphic account of an entomological expedition in Victoria. A vote of thanks was unaminously awarded to Mr. Anderson for his interesting paper.

Thursday, 16th April.—Mr. J. A. Clark, President, in the chair.

Exhibits :—Mr. Battley, five specimens of *Bombyx rubi* bred from larvæ taken at Reigate, one of the females having a light circle on the right fore-wing. between the transverse lines. On the left hind-wing one of the rays ended abruptly in the centre of the wing.

Messrs. Clark and Tutt exhibited long series of *Lithosidæ*. Mr. Tutt referred to the tendency of the species in this genus to assume as varietal forms the normal character of other species, thus forming as it were parallel ranges of variation. He referred in his own exhibit to *Lithosia pygmæola*, and in Mr. Clark's to *Lithosia deplana*, as exhibiting more special characters. Mr. Heasler, a series of *Agathidium nigrinum* from Highgate Woods. Mr. Huckett, a kitten with seven legs, eight feet, and two tails. The head and mouth were also very large.—G. A. Lewcock, A. U. Battley, *Hon. Secs,*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.

April 13th, 1891.—The President S. J. Capper, F.L.S., F.E.S., in the chair. Messrs. J. Collins, of Warrington, and W. R. Scrowcroft, of Prestwick, were elected members.

Mr. J. E. Robson, F.E.S., read a paper entitled " are *Abraxas pantaria*, and *A. ulmata* one species or two."—After remarking on the difficulty of obtaining exotic specimens of the genus, the author said that *pantaria* had been admitted into the British list on authority of one specimen, taken at Oakhampton Park, Somerset ; he referred to their geographical distribution, stating *pantaria* only occured in the places where *ulmata* was absent, he then minutely described the two forms, comparing the markings of each, and pointed out the very slight difference in the genital armature, which he considered to be due to local and climatic causes altering the form of the genitalia. The paper which was fully illustrated by many cases containing examples of the cenus, led to considerable discussion, as to what actually constitued a species. Mr. Tutt sent for exhibition the series of *Miana* from Armagh that recently caused so much controversy among London Entomologists, but so palpably distinct were the specimens of *fasciuncula* and *strigilis*, and so great the ease with which the examples could be separated, that no discussion arose. Mr. Robson exhibited some fine varieties of Butterflies, notably a *Vanessa atalanta*, without the black spots on the border of the hind wing, and a suffused *Colias hyale* ; Mr. Collins a wonderful variety of *Leucania lithargyria*, which had the hind wings deeply fimbriated with dark scales, the central portion of the wing being light.—F. N. Pierce, *Hon. Sec.*, 143, Smithdown Lane, Liverpool.

Gleanings.

Anaspis septentrionalis, Champion, a new British Beetle.—Mr. Champion describes and differentiates this new beetle in the April part of the E.M.M., p. 104-5. He took two examples of it at Airemore, Inverness-shire, in July, 1876.

CATOPTRIA DECOLORANA NOT A BRITISH SPECIES—Mr. Barrett in the Entomologist's Monthly Magazine show that this species has been erroneously included in the British list, on the strength of a record said to have been made by Mr. Machin, but which he never made. A correct figure of *decolorana* was given in the Entomologist for December, 1881.

PHYCIS (PEMPELIA) ADELPHELLA NOT BRITISH.—Mr. Barrett points out in the same Magazine that "there is not a particle of evidence to show that *Pempelia adelphella* has ever been taken in this country." The error was pointed out by M. Ragonot ("E.M.M.," XXII., 55.)

A Black variety of *Phigalia pilosaria* has been taken by Mr. Burton at Gainsborough.—"E.M.M.," April, 1891, p. 110.

We hear that the first volume of Mr. Tutt's work on variation of British Noctuæ will be published during the month.

LARGE SKATE.—"One of the largest skates ever landed on our coast was brought in on Monday, 2nd February, by the screw trawler Royal Prince. It measured 7 feet long by 5 feet 6 inches broad. It was sent to the fish market, North Shields."—"Newcastle Weekly Chronicle."

Our Assistant Editor, Mr. T. D. A. Cockerell, has been appointed Curator to the Museum of the Institute of Jamaica.

NOTES FROM MY DIARY FOR 1890.

BY JOHN W. ELLIS, M.B., F.E.S.

So little is known of the Coleopterous fauna of North Staffordshire that the following notes, copied from my diary for 1890, may be of interest to some of the readers of the "British Naturalist." They contain the results of a few expeditions made during time snatched from professional work during the writer's first year of residence at Stoke-on-Trent; together with a short list of the beetles collected during a holiday at Cannock Chase in Mid-Staffordshire, and at Broadstairs on the Kentish coast.

April 4th (Good Friday) was spent in collecting on Wetley Moor, a stretch of heathery common with an elevation of about 800 feet above the sea-level, situate about two miles on the Derbyshire side of

"The Potteries." In the late Dr. Garner's "Natural History of Staffordshire" this is given as a locality for—among others of the same family—*Acilius sulcatus*, a species generally considered common, but which I had never seen alive, and so I set out provided with a water-net. The day was most promising—fine and warm, after several days' rain, and the result more than justified one's most sanguine anticipations—about 50 species of the order Coleoptera being met with in the course of the afternoon. Of these, probably the most interesting captures were some half-dozen specimens of *Bembidium bruxellense*, a species which had only occurred to me on a single occasion—among shingle on the bank of the stream which flows down the Pass of Llanberis. On Wetley Moor it was found sunning itself on half-dried and sun-cracked patches of mud on the less elevated portions of the common, and it was accompanied here by its near relatives *B. nitidulum* and *B. lampros* in profusion. Beneath stones and among the dead leaves of heather on the higher parts of the moor, where the millstone grit crops out, many common species occurred, such as *Loricera pilicornis*, *Pterostichus nigrita* and *diligens*, *Harpalus latus*, *Bradycellus cognatus* and *similis* (both in profusion), *Dyschirius globosus*, *Homalota elongatula*, several common *Philonthus*, *Platystethus arenarius*, *Byrrhus pilula*, *Cytilus varius*, and *Cryptohypnus riparius*. Among the water beetles were *Haliplus fluviatilis*, *Hydroporus planus*, *erythrocephalus*, *gyllenhalii*, and *palustris* (all in abundance), *Ilybius fuliginosus*, *Agabus sturmii*, *bipustulatus* and *nebulosus* (the latter in profusion), *Colymbetes fuscus*, *Dytiscus marginalis*, *Acilius sulcatus* (3), *Hydrobius fuscipes*, *Limnebius truncatellus*, *Helophorus aquaticus*, *æneipennis*, and *brevipalpis*, and (among other *Coryxidæ*) *Coryxa geoffroyi* in profusion.

April 15th.—A hurried evening visit to Wetley Moor, when, notwithstanding a high wind which rendered water-collecting very tedious, many of the species recorded for the 4th inst. were again met with, while in addition, the following, among others, were noticed:—*Anchomenus albipes*, *Amara plebeia*, *Hydroporus melanocephalus* (abundant), *nigrita*, and *umbrosus*, and *Stenus speculator*. Two more *Acilius* were captured, and *B. bruxellense* looked for—but in vain.

May 3rd.—A Saturday afternoon spent in the woods and in sweeping the herbage growing by the side of the lake at Trentham—the principal seat of the Duke of Sutherland. Among the beetles captured were the following:—*Notiophilus rufipes*—a single specimen found

Presd. 1 MAY 91

BRITISH MUSEUM

EXCHANGE.

Duplicates.—Podalirius, Alexanor, Apollo, Jasius, Cassandra, Cleopatra, and many other rench butterflies in very fine condition. Desiderata.—Numerous British Geometræ and octuæ, or larvæ or pupæ.—T. Maddison, South Bailey, Durham.

Exchange.—Algerian Coleoptera, and numerous duplicates of shells, in exchange for land nd fresh-water species of the latter, mostly exotic, not in collection. Wanted principally: Gen. ulimus, Diplommatina, Alycoes, Clausilia, Pupa, generally Helicidæ.—C. J. Ancey, Administrateur-adjoint à Boghari, Algeria.

Duplicates.—American Lepidoptera and Coleoptera. Desiderata British or Exotic ombycidæ and Sphingidæ.—Miss Emily Morton, Newburg, New York. New Windsor elivery, U.S.A.

Exchange.—I should be glad to exchange rare vars. of H. nemoralis and hortensis with nyone who has paid special attention to these shells.—Rev. J. W. Horsley, Holy Trinity icarage, Woolwich.

Duplicates.—Boreata, Monacha, and others. Desiderata.—many common species to enew.—A. E. Hall, Norbury, Sheffield.

I have Vol. I of Ent. Weekly Intelligencer in duplicate, it is in good condition and ill exchange it for well got Lepidoptera. I would be glad to purchase or otherwise ntomologist Part 100, Vols. 2-5, and Ent. Annual for the years 1866-68 or 70 to end —A. E. Hall, Norbury, Sheffield.

American Lepidoptera. cocoons and chrysalides of same. American Birds' eggs, Indian elics snd fossils for Exotic Lepidoptera other than European. South American, African nd Australian especially desired.—L. W. Mengall, Reading, Pa., U.S.A.

Duplicates.—Ulmata, Tristata, Rurea, Chrysitis, Arcuosa, Affinitata, Decolorata, eustria and ova. Desiderata very numerous.—W. Brooks, The Gardens, Grange Hall, otherham.

Duplicates.—Davus, Tithonus, Blandina, Ulmata, Bipunctaria, Carpophaga, Farinalis, isitata. Desiderata. Many common species, pupæ preferred.—John E. Robson, artlepool.

TO CORRESPONDENTS.

Owing to the great pressure of matter, many interesting communications unavoidably tand over.

Conchological Section. All communications for this section should be sent Mr. T. . A. Cockerell. 3, Fairfax Road, Bedford Park, London, W., who will also name specinens and answer enquiries for any subscriber.

Mr. G. A. Lewcock, 73, Oxford Road, Islington, N., Hon. Sec. City of London Ento. nd Nat. Hist. Society, represents the Magazine in London, and conducts the section of oleoptera

New subscribers can have such portions of the Supplements as appeared last year as ollows: The British Hawk Moths, 24 pages, 6d; Hand-Book of British Spiders, 32 pages, plates, 1s.; British Pterophori, 24 pages, 6d. Subscriptions, and all communications ther than as above, to be sent to John E. Robson, Hartlepool.

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THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge, S.E. *Thursday, May* 14*th*, *Thursday, May* 28*th*,

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY, Free Library, William Brown St., Liverpool, on the Second Monday of each month at 7.30.

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JUNE, 1891. *Part VI.*

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22. **Chess Problems.** By E. W. Rayner.
23. **Postage Stamps.** By W. T. Ogilvie.
24. **Flowering Plants.** By James Britten, F.L.S. [*In preparation.*

SWAN SONNENSCHEIN & CO., Paternoster Square, LONDON.

beneath a stone in the wood; *Pterostichus nigrita*, *P. striola*, *Anchomenus junceus*, *Quedius maurorufus*, *Othius fulvipennis*, *Lathrobium brunnipes*, and *Lesteva longelytrata*—beneath logs by the edge of the lake; *Baptolinus alternans*—under bark. Sweeping and beating produced *Lathræmium unicolor*, *Homalium fossulatum*, *Epuræa æstiva*, and *Meligethes æneus* (both in profusion), *Scymnus discoideus*, *Dolopius marginatus*, *Phyllotreta undulata*, *Psilliòdes napi*, *Orchestes pratensis*, *Cœliodes quercus* (common on oak), *Liosomus ovatulus*, and *Strophosomus coryli.*

May 7th.—A very cold night with an east wind. Sweeping roadside herbage (and that very scanty) at Hanford, two miles from Stoke, produced very few beetles, among them being *Tachyporus brunneus*, *Stenus nitidiusculus*, *Chrysomela staphylæa*, *Psilliodes napi*, *Thyamis lurida*, and *Liosomus ovatulus*.

May 17th.—Another very cold night spent in sweeping at Blurton. The results, so far as species are concerned, were very poor, but among the few beetles captured was a specimen of the rare *Philonthus nigriventris*, and one of the uncommon *Deliphrum tectum*. This *Philonthus* resembles *P. sordidus* in its general appearance, but is at once distinguished from that species by the much finer punctuation of its elytra, which, however, are not so finely punctured as in the closely-allied *P. cephalotes*. From this species it is easily known by the absence of the wide depression in the forehead, and by the fact that the abdominal segments are entirely black beneath, instead of being margined with red as in *cephalotes*.

June 7th.—The early summer of 1890 was remarkable in Staffordshire for the profusion of hawthorn bloom—in many places the hedges looked as if they had been exposed to a heavy snowstorm. Pressure of professional work prevented my paying any attention to the beetles which frequent this attraction until the above date, when an afternoon was occupied with a visit to Silverdale, a few miles to the west of Newcastle-under-Lyme. After a few hours' work I obtained a great number of specimens of, however, a limited number of species, none of which were of any rarity. Among these were *Anthobium torquatum*, *Meligethes æneus* and *M. picipes*, *Byturus tomentosus*, *Telephorus limbatus*, and *T. nigricans*—all in profusion. *Polydrusus cervinus* was abundant, though somewhat worn, on birch in the same neighbourhood.

July 4th.—A fine day tempted me to an evening's sweeping of the herbage between Trentham and Barlaston, with fair result—over 30 species being met with. Among these were *Leistus rufescens*, *Stenus similis*, *S. tarsalis*, *S. picipes*, *Anthobium torquatum*, *Melanophthalma gibbosa*, *Atomaria atricapilla*, *Throscus dermestoides*, *Telephorus testaceus*. *T. flavilabris*, *T. lituratus*, *Thymalus limbatus*, *Thyamis lurida*, *Gastrophysa polygoni*, *Lema cyanella*, *Phratora vitellinæ*, *Phyllobius alneti*, and *P*, *pomonæ*, while the beautiful hemipteron *Calocoris sex-guttatus* was fairly common.

September 1st-15*th*.—The early part of this holiday was spent at Hednesford, in Cannock Chase, but owing to the extreme heat and consequent burning up of everything likely to harbour beetles, my game was not only scarce, but even what did occur was of the commonest. Two days there produced only such insects as *Leistus ferrugineus*, *Bembidium lampros* and *femoratum*, *Harpalus proteus*, *Bradycellus cognatus* (in profusion), *B. similis*, *B. harpalinus*, *Calathus flavipes*, *Olisthopus rotundatus*, *Bolitobius pygmæus* (in a fungus), *Quedius molochinus*, *Q. boops*, *Othius myrmecophilus*, *Corticaria fulva*, *Melanophthalma fuscula*, *Aphodius depressus*, *A. rufipes*, and *Strophosomus limbatus*. One specimen of *Amara lunicollis*, and a single (dead) *Typhæus vulgaris* were picked up. Several very small and exceptionally brilliant specimens (all females) of *Geotrupes stercorarius* were taken while flying in the hottest sunshine. In one lane *Agelastica halensis* swarmed on *Galium saxatile*, and all were of a bright, *brassy* green, so different from the blue-green Wallasey specimens that I did not at first recognize the species.

The remainder of this holiday was spent in London and at Broadstairs ; but although my visit to the latter watering-place had been looked forward to as promising great things in the beetle line, my expectation was doomed to disappointment. Everything was so scorched up, as a result of a fortnight of brilliant weather without rain, that insects of all kinds were very scarce ; indeed, with the exception of a few plants of mallow in a sheltered situation, the only chance of obtaining specimens was by searching beneath half-putrid heaps of seaweed above high-water mark. Here among a profusion of *Amara trivialis*, *A. familiaris*, and *Cafius xantholoma*, I met with a few *Amara similata*, one *A. continua*, one *A. consularis*, several *Omalium læviusculum*, and a few *Aleochara algarum* and *A. obscurella*. By searching beneath the plants of mallow mentioned above I found *Metabletus foveola* (common) and *M. truncatellus*, *Myrmedonia canaliculata* (common), *Stilicus affinis*, *Stenus subæneus*, *S. brunnipes*, *Anthicus floralis*, *Olibrus consimilis* (common), *Apion æneum* (common), and a few specimens of the bugs *Megalochæra erratica* and *Nabis lativentris*.

During the later months of the year my attention has been directed to hay-stack refuse collecting, the results of which are not yet sufficiently made out, but which will furnish material for a further communication.

Stoke-on-Trent, Feb. 1st, 1891.

GOSSIPING NOTES ON BRITISH COLEOPTERA.

BY G. A. LEWCOCK.

(Continued from page 54.)

D. quadrinotatus, Pz.—Common under bark. "Common and generally distributed" (G. C. Champion, "Kent and Surrey Coleoptera"). "Beaten from Scotch firs, West Wickham" (W. Chaney). "Under bark, Lyndhurst (rather common), Southampton, Merton, Loughton" (E. A. Newbery). "Under oak bark, and also under railings, Crown Woods, Shooter's Hill" (West). "Under loose oak bark in fields round Barnet. My series of this species and *D. quadrimaculatus* have parallel lines of variation as regards the basal spots, which range from oblong ovate to nearly circular" (Heasler). "Under bark, but more plentifully under dry moss and lichens on tree trunks" (W. H. Bennett, Hastings). "Under bark of many trees, and generally distributed" (R. Wilding, Liverpool). "Under bark, but rather rarely in this district, Bidston" (W. E. Sharp, Ledsham). "Common under bark of oak, Eastham Woods, but scarcely so common as *D. quadrimaculatus*" (Dr. Ellis, "Liverpool Coleoptera"). Ireland: "Not uncommon here. I took a number on trees, some under, and others on the surface, of the bark" (W. F. Johnson, Armagh).

D. quadrisignatus, Dj.—"Under bark of oak, apple, &c. Local and rare. Kent: Maidstone, Bexley. Surrey: Reigate, Forest Hill, Nutfield, Wimbledon, Horsell" (G. C. Champion, "Kent and Surrey Coleoptera"). "A single specimen taken round the roots of fir tree on Hayes Common, Kent, December, 1890" (Heasler).

D. nigriventris, Thoms.—"Sandy coasts, river banks, in flood refuse, &c. Common. Kent: Gravesend, Chatham, Sheerness, Whitstable. Surrey: Walton-on-Thames" (G. C. Champion, "Kent and Surrey Coleoptera"). Occurs also at Rainham, Essex. "Under very dry tidal refuse at Camber. I once took a single specimen near Langley Fort, Eastbourne" (W. H. Bennett). "This species occurs on our heaths during summer, under stones among the heather; Heswall, Thurstaston, and Bidston" (W. E. Sharp). Taken in same localities, under heath, by R. Wilding. Captured in some numbers by Mr. Robson, at Hartlepool. "I discovered this species on Bidston Hill, in February, 1882, and have since taken it there on several occasions. . . . It occurs under ling and heath, among the dead leaves" (Dr. Ellis, "Liverpool Coleoptera"). Ireland: "Recorded from near Dublin" (W. F. Johnson). "Sparingly in flood refuse near Poule-na-Phouca" (H. G. Cuthbert).

D. vectensis, Rye.—"Sandy coasts and river banks, in flood refuse, &c. Rare. Kent: Gravesend, Chatham, Sheerness" (G. C. Champion, "Kent and Surrey Coleoptera"). Dorset: Lulworth and Kimmeridge (C. W. Dale, Appendix to "Lepidoptera of Dorsetshire").* "A single specimen at roots of grass, Fairlight. The most persistent searching has failed to produce others" (W. H. Bennett, Hastings).

D. sigma, Rossi, is placed next to *D. vectensis* in Fowler's "Coleoptera of the British Islands;" which insect it resembles in shape and size, but the thorax is generally of unicolorous, testaceous red, without darker shade on disc; the abdomen is also pale, but sometimes darker at margins. Occurs "in marshy places, in flood refuse, &c. Rare. Kent: Westerham, taken by Rev. H. S. Gorham. Surrey: Dorking, Egham, banks of Thames" (G. C. Champion, "Kent and Surrey Coleoptera").

D. melanocephalus, Dej.—Generally a very common species in England, and occurs in vegetable refuse, under hedges, at roots of plants, on tidal banks, moss, &c. Widely distributed. Ireland: "Fairly common here (Armagh), by sweeping, and in damp moss. Also recorded from Belfast and Dublin" (W. F. Johnson).

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* I have perused this little work with much pleasure. Mr. Dale deals exhaustively with the lepidopterous species, but records only "a few of the chief rarities" of the Coleoptera found in Dorsetshire; the list occupying but five pages.—G.A.L.

BLECHRUS, Motschulsky.—The Greek word from which this name is derived means "weak, feeble," also "dull, sluggish." But one species, *B. maurus*, Sturm., occurs in Britain. It is rather common in South of England. I have found it on banks of Thames, below Barking, Essex, in flood refuse, and also running about in the damp creeks during sunshine. Occurs also "under stones, in moss, on pathways, &c. Common and generally distributed" (G. C. Champion, "Kent and Surrey Coleoptera"). At sides of walls, Blackheath (West). Tooting, common under bark, also at roots of plants; Putney, Pegwell Bay, Southsea (E. A. Newbery). Common on banks and under stones, Hastings (W. H. Bennett). "I have taken a single specimen here, but do not know the locality" (R. Gillo, Bath). "Scarce in this district" (W. E. Sharp, Ledsham). "Mr. Gregson records this species from the sandhills" (Wallasey ?). "I once found it in abundance at the north end of Wallasey Pool, dashing about, as I think Mr. Rye describes it, like an animated grain of gunpowder" (Dr. Ellis, "Liverpool Coleoptera"). Taken also at Hartlepool by Mr. Robson.

RECENTLY RECORDED IRISH COLEOPTERA.

BY J. MONTGOMERY BROWNE,
B.A., Moderator in Nat. S. Dub. Univ.

Dr. McNab's list of Dublin Coleoptera, published in 1878, numbered 623 species, and since that time no catalogue has been drawn up.

There are enumerated by Dr. McNab 109 species of the Geodephaga, including one species of Tiger beetle, *Cicindela campestris*. This is, as far as I can find out, the only Irish species, and it is found plentifully at Howth Head, and also occurs in one or two other localities in the Dublin district. In Cork, however, where I collected for some time, I have never seen it nor heard of its being taken.

Elaphrus riparius is recorded from Tichnoch, and is the only species of its genus upon the published list; but in 1888 Dr. Scharff took a number of specimens of *Elaphrus cupreus* upon a half-submerged log in the lake in Woodlands domain, Lucan.

Cychrus rostratus, though never taken in Dublin according to the catalogue, is yet not very uncommon but widely spread in the Cork district.

Another insect, not on the Dublin list, but found in County Cork and Belfast, is *Chlœnius nigricornis*, one specimen having been found by myself in the former of the two localities.

With regard to the Staphylinidæ, I took *Ocypus ater* on the Dublin mountains in 1889. This insect has not been recorded as far as I can find out.

Four species of *Silpha* are upon the list, the variety *S. subrotundata* (of *S. atrata*) being very widely spread both in Dublin and Cork.

With respect to the Lamellicornia, there are thirteen Dublin species of *Aphodius*, and one specimen which I have placed with *Aphodius ater* is rather peculiar as the elytra are chestnut brown, not black.

Geotrupes typhæus is stated to be common in Wicklow, but I possess only one specimen—a female—found dead at Howth. Mr. W. De V. Kane thinks it is not very common in Dublin, and I know of no specimen but mine being taken lately.

Serica brunnea I took at Lucan in a pile of wood dust in an old tree stump. It is already recorded from the Dodder.

Melolontha vulgaris is very common, but *M. hippocastani* seems rarer. I know of but three specimens of cockchafer from Cork, two of which in my possession are of *M. hippocastani*. It is almost unknown in that place.

Phyllopertha horticola is found in Dublin, but none of the Cetoniidæ are recorded by Dr. McNab in his 1878 list. Whether any of them are indigenous to Ireland I do not know, and I have only once seen a specimen of one of the Rose beetles found here—it being taken up dead on the southern coast not far from Queenstown.

Helops striatus is recorded from Wicklow by Mr. Tardy, according to the catalogue; but besides his entry I can find no record. In 1889 two specimens of this insect were taken by me in a dead tree stump at Delgany, County Wicklow, in company with *Rhagium bifasciatum*.

Meloë proscarabæus was also taken by me in April of 1887, 1888, and 1891. It occurred in great numbers on the banks of the Liffey; though I have never found it elsewhere. It appears to be a little later this year, and the females are much more numerous than the male. This species and *M. violaceus* are already on the list.

Of the Longicornia, *Pogonocherus hispidus* should be put upon the roll. An entry is already made by Fowler in his "Coleoptera of the British Islands," and a specimen was taken by me in the glen of the downs in a dead branch of a tree at the point where it snapped in two. This was in 1889. Seven species of Longicornia are—if this be added—found in the Dublin and Wicklow district.

To the Phytophaga of Dublin must be added *Gonioctena pallida*, which was taken in great numbers on the nut trees at Poule-na-Phouca by Mr. Sydney Cary, Mr. George Cuthbert, and myself, in 1890, on the May excursion of the Dublin Naturalist Club. I also record *Phœdon tumidulum* which I took on the banks of the Liffey. I have also another insect of this group, not yet identified, and very probably not recorded as yet.

To the Pseudotrimera three additions are made—these are *Coccinella* 22=*punctata*, taken by Mr. F. Neale in 1890; *Coccinella oblongoguttata*, found by me in 1889; and *C. ocellata*, first found by my brother at Glen Dhu (1888), and which appears pretty well distributed.

Dublin, 6th May, 1891.

Notes.

Irish Notes.—The following observations, suggested by the "Gossiping Notes on Coleoptera" ("British Naturalist" for March), may be of some interest to your readers. Although I have collected much in this district (South Dublin, the South of Ireland, and County Louth) I have never found a specimen of *Demetrias unipunctatus*. *D. atricapillus* is not rare in this county or in County Wicklow; but the only Dromii I have hitherto found are *D. linearis* and *D. nigriventris*. The former is very abundant on the commons north of the Boyne Estuary, but the latter I have taken only sparingly in some flood rubbish near Poule-na-Phouca, Co. Kildare. *O. melanura*, I believe, has never been found in Ireland, possibly because Irish Coleoptera as a whole have been little investigated; but I am disposed to think that insects which in Great Britain are local, or sparingly distributed, are pretty certain to have no place in the Irish fauna. Last year, however, I found the Hydrophilid *Philhydrus nigricans*, not hitherto in the Irish lists, in this neighbourhood.—H. G. Cuthbert, Blackrock Dublin.

Captures at Dublin, &c.—I have taken *D. linearis* at Stepaside, County Dublin, sparingly in cut grass; at Greystones, County Wicklow, in moss, unfrequently this spring. I have also taken this year, very sparingly however, *D. melanocephalus* at Stepaside, in moss. I believe *Demetrias atricapillus* is quite common in the Dublin district, as I have taken it this year rather frequently at roots of grass in various localities. A specimen of *D. unipunctatus* was sent to me from Cork locality—I believe near Douglas,—but I have never taken the insect myself.—Id.

Dinarda Mærkelii, Kies.—I have recently taken several specimens of this insect in nests of the black ant in this district (Penzance).—(Rev.) J. Isabell.

[Some half-dozen of these beetles were sent me in living state by our correspondent, and I exhibited them at City of London Entom. and Natural Hist. Society on May 7th. Mr. Isabell seems to have found out the best method of working ants' nests.—G. A. L.]

Hydroporus ferrugineus, Stephens.—In the Hastings district I have taken several specimens of this scarce species in two small pools on the cliffs, within a few yards of the sea; both the pools are less than a yard in circumference, but they are kept continually filled by a small spring which which runs through both of them.—A. Ford, Claremont House, Upper Tower Road, St. Leonards-on-Sea.

[Mr. Ford has kindly sent me two examples of this beetle. He is fortunate in discovering a new locality for it in the South of England. Fowler gives but three English localities, viz.: Collingbourne Wood, Kimpton, and Whalley.—G. A. L.]

Reports of Societies.

ENTOMOLOGICAL SOCIETY OF LONDON.

May 6th, 2891.—Mr. Frederick DuCane Godman, M.A., F.R.S., President, in the chair.

Mr. Robert A. Dallas Beeching, of 24, St. James's Road, Tunbridge Wells, Kent; Mr. H. Shortridge Clarke, of Douglas, Isle of Man; Monsieur Léon Fairmaire, of 21, Rue du Dragon, Paris; Mr. William Reid, of Pitcaple, Aberdeenshire; and Mr. Nelson M. Richardson, B.A., of Montevideo, Weymouth, were elected Fellows of the Society.

Dr. D. Sharp exhibited a number of eggs of *Dytiscus marginalis* laid on the sheath of a species of reed, and commented on the manner of their oviposition, which he said had been fully described by Dr. Régimbart.

The Rev. A. E. Eaton exhibited a collection of *Psychodidæ* from Somersetshire, including six species of *Psychoda*, eleven species of *Periconia*, and one species of *Ulomyia*. Mr. M'Lachlan commented on the interesting nature of the exhibition.

Mr. P. Crowley exhibited a specimen of *Prothoë caledonia*, a very handsome butterfly from Perak; and a specimen of another equally handsome species of the same genus from Tonghou, Burmah, which was said to be undescribed.

The Secretary read a letter from Mr. Merrifield, pointing out that the statement made by Mr. Fenn, at the meeting of the Society on the 1st April last, of his views on the effects of temperature in causing variation in Lepidoptera, was incorrect; he (Mr. Merrifleld) had never suggested what might happen to *Tæniocampa instabilis*, and had expressly stated that he had found a reduction of the temperature below 57° to produce no effect, whereas in Mr. Fenn's experiments the temperature must have been below 40°.

The Secretary also read a letter which Lord Walsingham had received from Sir Arthur Blackwood, the Secretary of the Post Office, in answer to the memorial which, on behalf of the Society, had been submitted to the Postmaster-General, asking that small parcels containing scientific specimens might be sent to places abroad at the reduced rates of postage applicable to pockets of *bonâ fide* trade patterns and samples. The letter intimated that, so far as the Englisk Post Office was concerned, scientific specimens sent by sample post would not be stopped in future.—H. Goss, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

April 23rd, 1891.—W. H. Tugwell, Esq., President, in the chair. Mr. E. Sabel, of Clapham, was elected a member. Mr. R. South exhibited a series of *Polyommatus phlæas*, among which were examples of the vars. *schmidtii*, Gerb., and *eleus*, Fab., and some other interesting aberrations, together with representations of the species from Europe, Asia, and Africa. Mr. R. Adkin, *Emmelesia albulata*, bred from pupæ received from Shetland, 1888, and stated that in 1889 four only were bred, while in 1890 upwards of twenty emerged, including var. *griseata*, Stgr., and var. *thules*, Weir. Mr. Adkin also exhibited *Cedesti gysselinella*, pupa in drawn-together fir needles, and *Lithocolletis vacciniella*, larvæ mining under side of leaves of *vaccinuim*, both species from Rannoch. Mr. Tugwell, *Larentia olivata*, from Portland. Mr. Billups, the three cabinet drawers of life histories shewn by him at the Annual Exhibition, and made remarks thereon; also pupa and imago of *Eulophus damicornis*, bred from *Demas coryli*, by Mr. Symes; *Cetonia aurata*, showing the position of the species in the cocoon after its change from the larval stage; and on behalf of Mr. Mansbridge, galls on Hieracium and birch, collected near Leeds. Mr Billups expressed an opinion that the maker of the former was *Aulax hieraeii*, Bouch., and probably the galls on the birch were a species of Phytoptus. Mr. Carrington exhibited and read notes upon Terrestrial Mollusca found near Toulon.

May 14th, 1891.—The President in the chair. Messrs. H. Rowland-Brown, B.A., F.E.S., of Harrow-Weald; G. Bird, of Honor Oak; F. E. Filer, of Southwark; G. W. Ruffle, of Camberwell; A. E. Dewey, of Walham Green; and A. C. Forrester, of Clapham, were elected members.

Mr. Tugwell exhibited, on behalf of Mr. J. E. Robson, of Hartlepool, a box containing varieties of the underside of *Lyeæna icarus*, *L. agestis*, and *Vanessa atalanta*, varieties of *V. urticæ*, *Cænonympha pamphilus*, var. *albescens*, a long, varied series of *Abraxas ulmata;* also a dark *Colias hyale.* Mr. Tugwell also showed, on behalf of Mr. Collins, of Warrington, a dark specimen of *Aplecta nebulosa*, an extremely dark form of *Acronycta rumicis*, var. *salicis*, and a variety of *Leucania lithargyria*, with almost white under wings with a strongly-marked black band. Mr. Jäger, living larvæ of *Callimorpha hera*, reared from ova obtained from a specimen captured in S. Devon, 1890. Mr. R. Adkin, *Noctua festiva*, from Forres., Isle of Unst, N. Wales, and Kent. Mr. Tugwell, bred forms of *Lobophora viretata*,

The Secretary read a letter from Mr. Merrifield, and extracts from his papers on the effects of temperature on the colouring of certain species of Lepidoptera, the consideration of which stood over until a subsequent meeting. Mr. Tutt contributed a paper—" Reproduction and Parthenogenesis."—H. W. Barker, *Hon. Sec.*

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

Thursday, 7th May.—Mr. Clark, President, in the chair. Dr. Chapman exhibited (per Mr. Tutt,) a hybrid between *A. betularia* and *prodromaria*, a very dark *T. populeti*, fine banded *T. instabilis*, a bred series of several of the genus *Acronycta*, *B. terealis*, from Hereford, &c. Mr. Quail, light coloured cocoons of *S. carpini*, from Wicken, with the insects produced from them, three being good varieties. Mr. Pont, bred series of *C. ferrugata* and *C. unidentata*, and pointed out that these *unidentata* have a small **V** shaped notch in the outer margin of the central band, that cannot be traced in the series of *ferrugata*. Messrs. Clark, Tutt, Huckett, &c., series of *Triphænidæ*, to illustrate a paper read by Mr. Clark, on the life history of *Triphænia subsequa.* Mr. Milton, *E. extensaria*, *pulchellata* and *Ephestia Kühniella*, also the following Coleoptera:—*Oxyporus rufus*, *Siipha 4 punctata* and *Cleonus sulcirostris;* Diptera, *Stratiomys riparia* and *Gastrophilus equi*, bred from the larvæ. Mr. Battley exhibited *Silpha lævigata*, &c., from Southend. Mr. Hasler, *Liosomus ovatulus*, and the var. *collaris*, from Highgate. Mr. Lewcock, living specimens of *Dinarda Mærkeli*, from Penzance; also a quantity of beetles received from Mr. Jarvis, of Cape Town, South Africa, on which he read some notes.

Thursday, *21st May*, 1891.—Mr. J. A. Clark, President, in the chair. Exhibits:—Mr. Smith, *Saturnia carpini*, from Wicken and Lyndhurst. He pointed out that the ground colour of these specimens was very different, the one bred from the light (Wicken) cocoon being much browner than that from the dark (Lyndhurst) one. Mr. Prout, a yellow var. of *Abraxas grossulariata*, a dark specimen of *Amphidasys prodromaria*, *Selenia illustraria*, *Nyssia hispidaria*, &c. Mr. Clark, series of *Tephrosia* *crepuscularia*, bred from an Epping Forest female. Mr. Bellamy, long series of *Anticlea badiata*, taken on lamps at Winchmore Hill, one of the specimens being dark, and having a very well defined white band on the fore-wings. Mr. Bayne, *Tæniocampa stabilis* and *T. gothica*, some of the former being asymetrically marked. Mr. Milton, *Selenia illustraria*, *Iodis lactearia Halias prasinana*, *Ennychia octomaculalis* and *Myelophila cribella*; in Coleoptera, *Agabus didymus*, *Liopterus agilis*, *Bolitobius atricapillus*, *Cteniopus sulphureus*, *Tenebris molitor*, and *T. obscurus*; in Hymenoptera, *Cymbex lutea*, *Abia nigricornis*, and *A. sericea*; and in Plectoptera, *Ephemera danica*. With reference to the latter order of insects he stated that they were usually said to live only a few hours but he had kept some of them alive for more than a day. Mr. Simes exhibited *Eulophus damicornis*, Kirby, a Hymenopterous parasite, bred from *Demas coryli*. Mr. Smith stated that he had visited Lyndhurst at Whitsuntide, but owing to the backward season, there were very few insects about. Messrs. Prout and Bayne had worked in Epping Forest, and had found Lepidoptera very scarce. Mr. Milton had taken several larvæ of *Halias quercana* in the same locality. Mr. Battley stated that *Lycæna argiolus* had been fully out at Southend during the past fortnight.—G. A. Lewcock and A. M. Battley, *Hon. Secs.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.

May 11th.—The President, S. J. Capper, F.L.S., F.E.S., in the chair.

Reports were read by the Secretaries of the district Records Committee, which showed that the lists of the various orders were progressing; but the Secretaries hoped, in order to make them as complete as possible, that they would obtain the assistance and co-operation of all entomologists who had done work in either of the two counties.

A paper "On the habits of some species of the Hymenoptera Aculeata," by Robert Newstead, F.E.S., was read, the author exhibiting several cases of Hymenoptera and two species of *Bombus*, *in situ*, stuck on thorns, said to be done by the Butcher bird. The President exhibited *Cicada anglica* from the New Forest. Mr. Stott, varieties of several species of Noctua. Mr. Day exhibited and explained a new setting-board (Day & Newstead's patent), which, by the use of glass slips, it is claimed the wings of Lepidoptera can be set accurately and without disturbing the scales.

The next Meeting of the Society will be on Monday, September 14th.—F. N. Pierce, *Hon. Sec.*, 143 Smithdown Lane, Liverpool.

GUERNSEY SOCIETY OF NATURAL HISTORY.

The April Meeting of this Society was held in Guille-Allès Library, under the Presidency of Mr. J. Whitehead; there was a large attendance. Mr. J. Linwood Pitts made a communication on the alleged effect of volition in crabs, in respect to the healing of a severed joint when a claw is accidently torn off. Mr. Derrick read a paper on "The Clays and other superficial deficits of Guernsey." After describing the various clays he discussed their origin, dismissing the idea of their deposit by a river as not meeting the known facts. He was of opinion they were of strictly local origin, washed out of the decaying rocks by rain and deposited in shallow hollows close at hand, at a time when the surface was free from, and the climate extremely cold. An animated discussion followed.

Mr. E. D. Marguand then read a paper on "The Flora of Guernsey, compared with that of West Cornwall." He remarked that though politically the Channel Islands belong to England, that geographically, and to a great extent zoologically and botanically they belong to France. Professor Babington gave the number of flower-plants and ferns indigenous to Guernsey as 553, but he (Mr. Marguand) had himself founed 660. For West Cornall 788 flowering plants and 25 ferns were recorded. He called attention to the fact that whilst rarieties were always recorded, the absence of species, generally common, was passed without notice, though this was of great importance when dealing with the distribution of species. He instanced many common English plants not found in Guernsey, and commented on each, and and concluded with remarks on (1)—rare British plants, indigenous both in West Cornwall and Guernsey. (2)—Plants, rare in England, but found in West Cornwall with Scilly, but indigenous in Guernsey. (3)—Plants peculiar to the Channel Isles, and Guernsey in particuliar, not occuring elsewhere in Britain though most of them are found on the neighbouring coast of France. The paper throughout was most interest and suggestive. Votes of thanks to Mr. Derrick and Mr. Marguand brought the meeting to a close.

Mollusca.

Notes.

We have lately received from Mr. C. T. Musson a very interesting little paper on the naturalised forms of Land Fresh-water Molluca in Australia, reprinted from Proc. Linn. Soc., New South Wales. Several species have been introduced from Europe into Australia, Tasmania, and New Zealand, all of which are discussed by Mr. Musson. On p. 886, it is suggested that the slug described in 1824 by Quoy and Gaimard as *Limax megalodontes*, may have been *L. flavus*, introduced The present winter had supposed *L. .megalodontes* to be referable to the Janellinæ, but in the light of Mr. Musson's suggestion, this reference seems quite doubtful, and it is very possible that it was *L. flavus* after all. If so, the species must have been introduced in Australia at a very early date.

Another point that requires clearing up is that of the Australian *Amalia*. No doubt *Limax olivaceus* Gould, *L. pectinatus* Sel., and *L. maurus*, Q. and G , are all the same species (although Mr. Musson does not consider the first an *Amalia*), but whether they represent a native Australian slug or merely *A. gagates* introduced does not seem to be known. Mr. Musson refers the specimens of *Amalia* he found in New South Wales to *A. gagates*, but a sufficient comparison with European examples does not appear to have been made. Another noteworthy fact is the occurrence of three introduced species of *Arion* in New Zealand. It would be very interesting to hear what colour-variation *A. ater* presents under its new environment. Mr. Musson mentions *A. ater* as also introduced in the United States, but all the records of its occurrence on the American continent are erroneous.

Dr. Simroth has published a most important work on Slugs—nominally of Portugal and the Azores, but really treating of most of the European genera and species. This work was written some four years ago, though only now published, and consequently is, in some respects, hardly up to date; but it contains a vast amount of valuable information. A few non-European species are also discussed. *Philomycus bilineatus* (p. 368) appears to be *P. confusus*. The *Limax* found by the "Challenger" expedition at Teneriffe and Tristan d'Acunha, and referred by Mr. E. A. Smith to *L. canariensis*, was really *Agriolimax agrestis*, form *sylvaticus* (Moq.), as shown by the specimens, which are in the British Museum. This being the case, Dr. Simroth's remarks on p. 280 will require modification, and Tristan d'Acunha should not be given as a locality for *L. arborum* on the map.

Mrs. M. E. Cusack sends a small collection of shells found by her at Petersfield, Hants., including *Helix hortensis*, form *philbertia*, and a new form *bicolor*—pink, with the upper part of the spire yellow; *H. cantiana*, *H. lapicida*, *Limnœa truncatula*, *Vitrea (Hyalinia) cellaria* *V. (H.) nitidula*, and a small *Cochlicopa lubrica*.

Last year the Rev. J. W. Horsley sent the writer a list of the British varieties of *Helix nemoralis* in his collection, among which the following were new to the British list:—*H. nemoralis*, forms *roya*, *freminvillea*, *brotia*, *biguetia*, *pascalia*, and *gmelina*. His collection also contains the form *hyalozonata*, from Arran Is. (Ireland) and Deal.

The above-mentioned form *bicolor* of *H. hortensis* also occurs by the Thames at Kew, Surrey. A series of *H. hortensis* found by the writer there last year included forms *lutea*, *arenicola*, *bicolor*, *bouchardia*, *roseozonata*, *quinquevittata*, *astieria*, *lespesia*, *aleronia*, and a few others. The last two were new to the British list.—T.D.A.C.

Vertebrata.

"WHAT IS A BIRD?"

BY LINNÆUS GREENING.

(Continued from page 92.)

Having given a history of the development of a true feathered bird from a scaled reptilian ancestor, it may occur to some to ask what grounds we have for assuming this to be even probably accurate, and is there any analogous process in any other group of animals. To this we must reply that as previously stated, the resemblance between birds and reptiles is so close as to compel the belief that they are divergent members of one family, and that as no better explanation is forthcoming, and the one given is not in opposition to any facts, it may be provisionally accepted, and the assumption that feathers which are now functional for flight, arose primarily as a body covering, is justified by experience. To say that our assumption is justified by experience may sound somewhat startling, but a little consideration of such a familiar object as a butterfly's wing will shew that it is perfectly just. Without going into minute details it must suffice to point out, that as every entomologist well knows, the structure of a butterfly's wing clearly indicates that it is a modified breathing organ. In other words, what was once the gill of a water insect has become functional solely for locomotion, the breathing has become the flying organ; and the beautiful colours which adorn our butterfly are due to the scales which give the name to this order of insects, and which are modifications of the hair-like growth covering the body, which has gradually extended over the wings. This scaly covering of the wings does not enable the insect to fly more rapidly, in fact rather the contrary, and though its original development is due to that process of katabolism which has been previously referred to, yet its preservation and the beautiful arrangements of colour, so characteristic of these insects, must be referred to sexual selection, modified in some cases by what, for want of a better term, is called protective mimicry. The evolutionary process by which our Lepidoptera have been developed from an aquatic worm, is parallel to that by which, as we have endeavoured to shew, the plumage of our existing birds has been developed from the scales of some old world lizards.

Before leaving this part of our subject, it may be well to note the parallelism between the sloughing of reptiles and the moulting of birds. All reptiles cast their skins periodically, and the same holds good of the moult of birds. If part of a scale of a reptile be cut off it will not be replaced till after sloughing; in the same way, if a feather be cut partly away, it will not grow nor be renewed till the next moult, for it is known that after a feather has grown to its full size it receives little or no further nourishment. When the moulting season arrives, the old feathers are pushed off and speedily replaced by new ones which rapidly attain their full size; the process of moulting is not quite so rapid as the sloughing of a reptile, but, like it, is accompanied by considerable disturbance of the animal's system, so much so that birds die during the moult as reptiles do during the slough.

Referring again to that solitary species *Archæopteryx macrura* which is of such cardinal importance in the eyes of the evolutionist, though, no doubt millions of other closely allied forms lived but have left no trace, for it must be remembered that the small size and slight bones of these birds make it certain that few would be preserved in a fossil state, the most striking part of its skeleton is the tail which gives it its specific name.

Archæopteryx macrura possessed a tail more lizard-like than that of any other known bird, recent or fossil, consisting as it did of 20 elongated vertebræ each supporting a long feather on either side. It will be evident that this long slender tail would be almost useless as a rudder during flight, and if the bird alighted on the ground it would be liable to injury, and might be a source of danger to its possessor, the feet of *Archæopteyx* however tell us distinctly, that it was a perching and tree-loving bird. The two fossils of this species are the first and last, so far as we know, characterised by this form of tail, all subsequent bird-fossils possess a coccygean bone, which is formed by the coalescence of several of the last caudal vertebræ. This form of tail contrasts in a marked manner with the earlier reptilian one; and has superseded it because of the more effective rudder of which it is the support. The fan-like arrangement of the tail feathers, characteristic of all existing flying birds, is only possible where this coccygean or ploughshare bone has been developed; and just as in the Oolite period flying birds had been developed under the circumstances already described, so the further development of the tail as a more effective rudder or steering apparatus, would tend to be preserved and accentuated because of the increased power it would give, of escaping foes as well as obtaining greater quantity and variety of food. It is not likely, that during the secondary period when sea and land were over-run with enormous reptiles, any development of leg power such as we see in the ostriches would take place, and it is probable that the power of flight would be still further specialized, since birds only possessing small flying power and inefficient steering apparatus would fall easy victims to the *Pterosaurians*, which exercised a reign of terror in the air, as did the *Dinosaurians* on the land. This justifies the assertion, supported by other anatomical considerations, that all existing birds are descended from flying ancestors, and that forms so different as the Penguin and the Ostrich, are simply specializations for marine and terrestial life. The development of the coccygean bone is intimately associated with that of the power of flight. All existing birds which are strong on the wing (with one group of exceptions) are remarkable for the large ploughshare bone which supports the tail feathers. The exceptions are a few of the long-legged birds such as Herons, Cranes, Spoonbills, and Flamingoes, which fly with their legs stretched out behind them, using them as rudders and consequently in these birds the coccyx is very small. In Apteryx and the Penguin, the Cassowary and Emu, the coccygean bone is not ploughshare shaped but rod-like; still, it is evidently formed by the fusion of several of the terminal caudal vertebræ. As these birds never fly, this is only what might be expected. In the Ostrich, the shape of the coccyx is more like that of the flying birds, but in Rhea sometimes called the American Ostrich, it would seem that we have either a reversion to an earlier type or a descendant of an order of birds which had never developed the coccygean bone, since Rhea does not possess one, its short tail being as distinctly reptilian in shape as that of Archæopteryx.

It may be asked, is not this inconsistant with what has been already said as to all existing birds being decendants of flying ancestors. An examination of the wing-bones of the Rhea at once settles this question; though slender they are very much longer than those of any other running bird, and the absence of the coccyx cannot out-weigh the other evidence that Rhea is descended from a flying ancestor. The same holds good of the other running birds;

if it were not so, why have they all the bones of the flying birds? identical bone for bone, though reduced in size, so much so that in some they bear no wing-feathers. It is impossible that these wing bones can be nascent since they are absolutely functionless. Whilst speaking of the wing-bones it may be mentioned that they are identical with those of the fore-limb of a reptile. When we examine the wing bones of the Penguins and allied species, we find that they are not materially reduced in size, since though in these birds the power of flight is lost, the wings serve as swimming organs.

We have seen that it was highly improbable that any persistent variation in the direction of leg power, such as marks the existing Ostriches, could take place in the secondary period, yet at the close of that period after the disappearance of the great saurians there would be many parts of the world in which modifications which were previously disadvantageous might take place freely and persistently. Some of these variations in the direction of lessened wing power, which owing to the extreme severity of the struggle for existence, had not previously been able to maintain themselves, would now become established and intensified. The great Dinosaurians as well as the formidable flying reptiles had become extinct, the large carnivora had not yet been developed, and so birds of small wing power could grow and multiply. It is certain that diminished wing power would be accompanied by increased development in other directions, and so would be evolved from the strong-winged flying bird of one age, the weak-winged but long-legged and long-necked running bird of a later time. When carnivora became numerous the struggle for existence would again become intensified, and the smaller or less active running birds would fall victims unless able to conceal themselves; any favorable variation in the direction of increased strength or speed would be preserved, and just as accumulated variations had in an earlier age produced a flying feathered bird from a scaly tree lizard, so from the running weak winged descendants of flying birds were produced such giants as the Asiatic ostrich of Tertiary times, as well as the ancestors of our existing Rheas, Emus, and Cassowaries. It is difficult to conceive any other explanaiion of the origin of the remarkable birds which formerly existed in New Zealand. Of this group there were not less than 18 species, some of which obtained a height of 16 ft. Amongst these Moas, of course there were variations in size, but all, whether big or little, were remarkable for the diminution of the wings and the relatively large size and strength of the legs. The cause of the extinction of most of these curious birds was the advent of man, before whom the large Moas disappeared and the only existing representatives of the great running birds of New Zealand are the shy and pigmy Ki-wis. It is probable that the extinct running birds such as the Indian ostrich *(Struthio Asiaticus)* and the *Œpyornis* of Madagascar were also victims of that higher animal, whose power consists, not in the strength of his limbs, so much as in the development of his brain.

As more recent instances of the destruction of birds which were used as food for man, we may mention the Dodo and the Great Auk.

(To be continued.)

DIMENSIONS AND WEIGHT OF LITTLE AUK.

A male specimen of the Little Auk was caught in the Harbour here, on the 28th November last. It was very thin, the following are its dimensions and weight: –

Weight	$3\frac{5}{6}$ oz.	Length of bill, base to point	$\frac{1}{2}$ in.
Total length	$9\frac{3}{8}$ ins.	,, gape	1 ,,
Expanse of Wings	$16\frac{5}{8}$,,	,, tarsus	$\frac{7}{8}$,,
Length of wing from carpal joint	$4\frac{3}{4}$,,	,, toes, middle	$1\frac{1}{4}$,,
Length of tail	$1\frac{3}{4}$,,	,, ,, inner	$\frac{7}{8}$,,
Length of head	$2\frac{5}{8}$,,	,, ,, outer	$1\frac{1}{4}$,,
		Irides, dark brown	

T. KERRY, Harwich.

Gleanings.

A TRAP FOR CAPTURING COLEOPTERA.—The Entomologist News for May gives a figure and description of a trap for Capturing Coleoptera, devised by Mr. T. D. Ashton, Tonganoxie, Kansas. It consists of a wide funnel—two feet diameter, and three feet high is recommended. There is an opening on one side for about half the height. The small end of the funnel rests in a cyanide jar—a two quart jar being the size suggested. In the centre of the funnel a light is placed, to be visible on the open side. This attracts the beetles, which coming against the opposite side will fall into the chamber of death below. The inventor states that there will always be a few Lepidoptera and Neuroptera spoiled by friction in the jar, but Hymenoptera, Hemiptera, and Orthoptera will be in good condition as well as Coleoptera. He considers it the best trap for Coleoptera yet introduced, and speaks of enormous numbers being obtained nightly by it. He strongly recommends its use, and asks those who try it to report results. Perhaps some of our large circle of Coleopterist readers will try it. It is neither elaborate nor costly. Should anyone not understand from the above how to make it, we will be glad to lend the Magazine.

HETEROCERNS BRITANNICUS, KUWERT, A NEW BRITISH COLEOPTERA.—The Revd. W. W. Fowler, in E.M.M. for May, quotes Kuwert's description of this little beetle. It is not usual for British Entomologists to overlook a novelty, but the Austrian Coleopterist has been before them this time. Mr. Fowler found a specimen in his own collection, sent him from Dumfries as *H. sericans* which proves to be the new species. Mr. Fowler also states that the *H. fusculus*, Kies. of our lists appear to be *pulchellus*, Kies., and that it is doubhtful whether we have *fusculus* at all.

BIRDS USING THEIR FEET FOR STEERING.—Now and then we hear it asserted that birds use their feet for steering. We doubt, however, whether anyone ever had the fortune to witness this curious use, so plainly as Mr. Spears, of New York, did during a late voyage to Greenland. He says it was quite a common thing for an Arctic tern to pose itself on a windy day directly above the taff-rail, and hold that position, regardless of the speed of the vessel, for from eight to ten minutes, in the meantime examining everything abaft the the house, apparently with a critical eye. When satisfied with the inspection, it would with a quick motion, lower one of its black-webbed feet, with the web across the line of flight. The effect of this was exactly the same as that of a ship's rudder. When the left foot was dropped, the bird turned to port ; when the right, it turned to starboard. If the foot was lowered only a little, as was sometimes done, the bird turned slightly ; when lower straight down and spread wide out, the bird turned almost as if on a pivot. When the bird was sailing beside the ship, a foot was used sometimes to shape the course, which had been altered apparently by a flow or eddy in the wind, caused by the sails. Of course, the wings and the tail were very often used in conjunction with the foot; but Mr. Spears never saw the foot used when the bird was flying by flapping its wings continuously.—"Rod and Gun."

Insecta.—Hymenoptera.

Notes.

Aspilota concinna, Hal., bred fbom Homalomyia canicularis.—I have been breeding, during the present month, a great number of *Aspilota concinna* from an old nest of *Vespa vulgaris*, obtained last September, near Plymbridge. I have also bred a quantity of their host, *Homalomyia canicularis*.—G. C. Bignell, Stonehouse, Plymouth, 14th May, 1891.

Perilitus falciger, a Parasite in a living Beetle.—This very interesting species has been bred from *Timarcha lævigata* by the Rev. J. Isabell, who boxed three beetles brought to him at the Land's End by Mr. Crawford, on the 30th March. On examining the box the following day he observed that a number of larvæ had escaped from one of them, and on further investigation it was found that forty-one altogether had left their host, twenty-three of which spun up in slight white cocoons in the angle formed by the bottom and side of the willow-chip box. Eighteen, however, had not sufficient strength, or were injured by the occupants of the box, or may be the box was too dry for them. Of those that formed cocoons, nineteen emerged on the 1st May and following days. On reference to Marshall's "Monograph of the British Braconidæ," Part II., p. 76, he mentions that "A specimen exists in the British Museum, ticketed in the handwriting of F. Smith, 'the larva from a living *Timarcha coriaria*;' and one specimen, a ♀ in the possession of the author, taken in Northamptonshire.—Id.

Lepidoptera.

NOTES FOR BEGINNERS.—MICRO LARVÆ FOR THE MONTH.

BY GEO. ELISHA, F.E.S.

The month of June with all its delightful freshness has arrived, and we are still busy with many of the species occuring last month, for it often happens in cold backward seasons many larvæ are two or three weeks late, but towards the end of the month these little matters seem to adjust themselves, for after a short spell of fine weather we find most things pretty much up to date.

We must now redouble our energies, for larva collecting is at its height, and the difficulty as to what is best to take, out of the abundance around us, daily becomes more apparent; to the beginner all is fresh and welcome, but a little timely assistance in the way of information often saves a lot of needless trouble.

If we examine the sloe bushes in open parts of woods, we shall probably find a dirty looking web attached to some of the stems, very like a piece of dirty wool, this is formed by the larva of *R. suavella*, and are more easily detected by the fresh web spun by the larvæ at the end where they crawl out to feed on the leaves, it is best to cut off all those pieces of the stems with the web attached as carefully as possible, and place them about on some fresh branches in a good, airy cage, and in due time a fair number will be bred. On oak trees, in a mass of dead and drawn-together leaves at the end of some of the branches, the larva of *O. tumidella* will now be found in a sort of gallery of silk and frass intermixed. On the maple trees the transparent-looking, greyish-green larva of *D. forskaliana* may be taken in the rolled-up leaves. Some of the leaves of the wild rose bushes will be found neatly folded by the larvæ of *D. bergmanniana*. The birch trees also at this time have the leaves rolled up longitudinally by the larva of *P. solandriana;* by taking a good supply some very fine forms may be bred.

By beating oaks we may now obtain the green larva of *T. alpella*, and towards the end of the month their cocoons in the chinks of the bark; and by beating sloe and wild apple, the larva of *T. horridella*.

The larvæ are bright green, with distinct white stripe along the back, attenuated at both ends, and extremely lively, jumping about in all directions when in the net; an easy species to breed, but far from easy to find, for they are one of the most local species. I have only found the larvæ in one small patch of its food plants, in an unfrequented part of Epping Forest, near Loughton. We must not forget to beat the hawthorn trees, for now is the time to get the larva of *H. scabrella.*

If we now examine the clumps of *Artemesia vulgaris* growing by the roadside or waste places the beginning of the month, we shall find some of the shoots are drooping and withered. This is caused by the larva of *E. allisella;* these larvæ go down into the root during the winter months, and in the spring work up the fresh shoots, causing them to droop and die. When the moth emerges the cocoon is left sticking out of the side of the stem. The beginning of the month is the best time to search for the large, curved, black cases of the rare *Col. conspicuella* on the under side of the leaves of *Centaurea nigra*, for they are now about full fed. It is a most difficult species to breed, even if the larvæ are full grown. I have taken a great many some seasons, but rarely breeding more than three or four specimens, and on cutting the cases open have found the larvæ shrivelled up, so that I think most of them die when changing to the pupa; some of them, I am convinced, must hibernate, for I have found some of the larvæ crawling about in the cage in September, long after the time when the moth emerges; and again, when taking the full-grown cases, some are to be seen very small, certainly not more than one-third the size of the others, and as the moth emerges in July, these, I think, must remain as larva till the following season; I am acquainted with the larvæ of most of the Coleophora, but have never observed this habit in any of the others. While searching the leaves of the *Centaurea* for these curved cases, some small, straight, black cases, with whitish keel, will be observed; these are the larvæ of *Col. alcyonypennella*, and in the shoots of the same plant the larva of *D. liturella* will be found drawing them together. In the shoots of Burdock the larva of *D. arenella* is occasionally to be found with similar habits. The early part of the month is about the best time to search for the larva of *N. schiffermillerella (fasciellus);* these larvæ form flat, fiddle-shaped cases, and are found under the radical leaves of *Ballota nigra*, which they gnaw into large holes, and as the larvæ drop to the ground directly the leaves are disturbed, it is best to carefully search the surface of the ground at the root of the plant for them. The moths emerge about 9 a.m., and become very restless directly the sun shines on them, flying up and down, thus soon becoming worn. In damp places where the *Angelica sylvestris* is growing freely, some of the tops will be found drawn together by the larvæ of *D. angelicella*, and the tops of the Meadow-sweet *(Spirea ulmaria)* by the larvæ of *P. shepherdana.*

We must now again examine the *Genista anglica*, when we shall find some of the twigs have the leaves all drawn together up the stem and very much bleached; if on pulling it apart we find a reddish-green larva in a sort of silken gallery, it would be the larva of *Gelechia albipalpella.* The bleached appearance of some of the leaves of the *Lotus corniculatus* next claims our attention, and we are surprised to see the ingenious method the larva of *Gel. tæniolella* adopts to secure a steady habitation, viz.: drawing three leaves together from different directions, and securely fastening them with silk, so that it matters not which way the wind blows—the steadiness of its domicile is not affected in the least. A little further on we observe some of the leaves of *Hypericum perforatum* very neatly folded over into a sort of conical habitation by the larva of *G. auroguttella ;* the plant is easily distinguished on being held up to the light, for its leaves appear as if perforated with numberless small holes. On sallows and willows similar cones are formed by the larvæ of *G. stigmalella.* On oak trunks the larva of *Col. lutipenella* will be found crawling about to find a suitable place to fix their cases, and on hawthorn and sloe the straight, brownish cases of *C. nigricella* are only too common.

And now, for a change, we will have a ramble on the sea wall of some tidal river; soon the discoloured tops of the *Chenopodium* and *Atriplex* makes us turn aside to ascertain the cause, on pulling open the webbed-together seed-heads we shall soon find the pretty striped larva of *Gel. atriplicella*, and mining its leaves, making whitish blotches, the larva of *Gel. nævifecella* is very busy, while at the same time, on the same plant, other leaves will be seen blotched with an irregular greenish mine: this is caused by the green larvæ of the beautiful reddish *Gel. hermannella.* On the salt marsh and edges of the stream the *Aster tripolium* is growing plentifully, on examining its fleshy leaves we shall observe some of them have a rather transparent streak running upwards and turning when nearly to the top, and again working downwards in a serpentine manner. This is the mine of the greenish larva of *Bucc. maritimella*, and a little later on their beautiful ribbed cocoons may be found attached to the long, wiry grass stems.

By searching the *Artemisia maritima*, the long, whitish cases of *Col. maritimella* will be found, for now they are getting full grown, and some of the cases of *Col. artemisiella*, which are short and mealy-looking. The autumn is the best for the latter species, when they may be taken in abundance. We must also keep a sharp look-out for the curved, black cases of the recently discovered and extremely rare *Col. vibicigerella*, which are now about full grown, and in the drawn-together shoots the fat larva of *C. wimmerana* will be found. The thistles which are growing close to the posts and rails should be examined, for it is in these plants the larva of *D. subpropinquella* will be found making quite a gallery along the mid-rib of the leaf.

In sandy places on the sea shore, where the sea holly *(Eryngium maritimum)* is growing freely, some of the topmost shoots, which are now getting well above the ground, will be found black and discoloured, this is caused by the larva of *D. cnicella*, which feeds in the top of the shoot and edges of the leaves, curling them over; they are of a dull green colour, with blackish-green head, and several of them are often found in one shoot, some about half grown, and others certainly not more than a day or two hatched. They are an easy species to rear, and when they occur are generally pretty plentiful.

We will now work our way back along the lanes, and are soon busy filling a tin with the larva of the very handsome *Antispilla pfeifferella*. These larvæ mine the leaves of the Dogwood *(Cornus sanguinea)* between the upper and lower cuticle, when full fed cutting out an oval case and falling to the ground, remaining among the rubbish till the following May, when they emerge. A little further on along the edge of the wood, the shoots of the rose bushes, now coming into bud, have some of them drawn together by the delicate, pinkish larva of *P. rhododactylus*. On the leaves of the poplars growing by the wayside the snail-like tracks of the larva of *Phyll. suffusella* cannot fail to attract our notice. We hurry onward, for time is getting short, but cannot resist the temptation of gathering a few of the pretty blue flowers of the common milkwort *(Polygala vulgaris)*, and are pleased to find one of the tops drawn together by the pretty larva of *Hypercallia* *christiernella.* This lovely species seems to have entirely disappeared from its old locality near Sevenoaks, owing, I fear, to so many becoming acquainted with its very restricted haunts; and as space is getting short, will just observe that the larva of *S. cratægella* is now to be found in a dense web on the sloe and hawthorn bushes. These larvæ are gregarious in their habits, and are now about full grown.

122, Shepherdess Walk, N.

Notes.

THE GENUS ACRONYCTA, AUCT.—I have read Mr. A. G. Butler's remarks in the "Entomologist," on Dr. Chapman's proposed division of this genus. Having but little experience with regard to the various species, I am unable to enter into any discussion on the merits of Dr. Chapman's investigations, but it has appeared to me that he has honestly endeavoured in a painstaking and praiseworthy manner, to elucidate and place before British Entomologists, much needed details concerning the life history of such of the species, at present classed in this group, as occur in Britain. In his opening remarks Dr. Chapman states the reasons which induced him to record his observations, and makes reference to a paper "by Mr. A. G. Butler, which propounded such extraordinary ideas, that I felt it was necessary that further remarks should confirm or refute them." Entomologists who have read the papers will certainly acknowledge the careful and exhaustive manner in which Dr. Chapman has treated the subject, and it would ill become me to say one word decrying his good work.

There is one portion, however, of these papers which for some time past has been the cause of much heart-burning, viz.:—the subdivision of the genus, and the suggestion of the new names for the different sub-genera in which he breaks it up. Dr. Chapman himself, does not, in his paper, use any of these names generically, except in the description of the plate in the last number (in the plate itself *Acronycta* is used). But various writers in the "Record" appear to have used these sub-generic terms as names of genera, myself for instance, in reporting the proceedings of the City of London Entomological and Natural History Society, for August 21st 1890. In that report *Acronycta accris* is called *Cuspidia aceris.* Mr. Butler enumerates six persons in all who have thus used this term, and on the strength of this list he makes bold to affirm that "these names

. . . . . . have been adopted as genera by several writers in the Entomologists Record."

So far as my experience goes, in the magazines of to-day, contributors have no control over the nomenclature of their communications, which is altered in accordance with the views of the Editor. One very striking illustration of this must be well known to Mr. Butler, any enlargement on the point is quite unnecessary. I think, therefore, whatever may be the ultimate decision respecting the breaking up of the genus *Acronycta*, that Mr. Butler must see that the position he takes up, in making myself and others responsible for changes in generic nomenclature, is quite untenable and must be abandoned.—G. A. Lewcock, Islington, N.

Nyssia zonaria in Antrim.—As the weather has been so very bad I thought I would run up here for *Zonaria*, also to try the sallows. These are quite useless, although well situated, being just at the edge of a wood ; there is nothing at them night after night. *Zonaria* was a week later in appearing than when I was here in '89, but very abundant, large, and varied. I have them from almost white to dark smoky all over. I believe this is the only Irish locality, and I am sorry to say there is great fear of it being destroyed at no distant date by building operations. The specimens here are certainly larger and brighter coloured than those from New Brighton.—E. R. Curzon, Howth, April 10th, 1891.

Variety of Pieris Rapæ.—On July 19th, 1890, whilst sitting at my own door netting the white butterflies that were sipping the sweets of a large patch of *Silene maritima* flowers, that I might examine them for varieties, I took one specimen that seemed to me to be quite unique. It is a fine but not large female, the basal shadings and apical patch are well-pronounced greys, whilst the three usual spots are large and black. The special peculiarity of the specimen is that it has a small but quite distinct grey spot rather low down and between the inferior nervures of the hind wings. Under a pocket glass these spots differ, one being four pointed, and the other five. I do not propose to call this interesting aberration var. extra dot *Mihi*, but desire to record it that observers may be on the look-out for others. I am old enough to remember the discussions of more than 50 years ago, before Westwood & Humphreys' "British Butterflies" was published in 1841, whether *Metra*, Step., and *Sabellicæ*, Step., were distinct species or varieties of *Rapæ* and *Napi ;* but I cannot call to mind any record of one of them being taken with an extra spot on the wings.—C. S. GREGSON, Liverpool.

LEPIDOPTERA FROM DONCASTER.—The weather still continues to be very cold. The nights are usually clear and often frosty, and there is nothing to be done at either sugar or sallows. However, during the day, when the sun gets out, there is warmth enough to tempt some insects out, and I have taken the following specimens :—

March 27th.—One specimen of *H. leucophearia*, v. *nigricaria.* This, I believe, is a new record for Yorkshire.

April 2nd.—*O. fagella* seen for the first time this year.

April 12th.—*Fagella* and *Hyemana* were common, and I saw a few *Microp. unimaculella* on birch.

April 14th and 15th.—*Microp. unimaculella*, *purpurella*, and some others that I have not yet determined, in thousands on the birches. I also took a *Tortrix* on birch, but as yet I have failed to discover its name.

April 17th.—I took from the trunk of a young birch-tree a very handsome form of *B. parthenias*, in which the pale costal blotch is much larger than usual. Also one specimen of *S. avellanella.*

April 19th.—*Micropterygidæ* still in any number. Also a rather light form of *C. flavicornis.*—H. H. CORBETT, 19, Hallgate, Doncaster, April 2nd, 1891.

AT THE SALLOWS.—I discovered some sallows about 3 miles out of Sunderland the other day, and on April 30th a friend and I had a try at them with fairly satisfactory results. We took about 30 splendid *Gothica*, a few *Rubricosa*, 3 *Gracilis*, one very fine and dark, and some very variable things which I suppose must all be *Instabilis*, but they are so entirely different from one another it is hard to believe them one species. I also got a few *Anticlea badiata.* On May 5th we went to Castle Eden Dene, but the wind was easterly and cold. We only got about a dozen *Rubricosa* between us, 2 or 3 *Gracilis*, *Stabilis*, and *X. lithoriza ;* also *Badiata* and *Diurnea fagella.*—L. S. BRADY, Sunderland.

CAPTURES AT WATERFORD.—During April I have been busy with the *Tæniocampæ*, and have obtained fine series of *Stabilis*, *instabilis*, *gothica*, and *rubricosa*, the latter very interesting, being a distinct grey form. I have also taken a series of very strongly marked *S. lobulata*, and another of *E. abbreviata :* but the want of warm weather is keeping everything back. I hope to get off for *D. cæsia* at the end of the month.—E. R. Curzon, Dublin.

Ballycastle, Ireland.—I did well during my run up to Ballycastle, and took a nice lot of Tæniocampas, including some good forms of *T. rubricosa;* also a long series of *Zonaria* larvæ. *E. abbreviata* was common, and *S. lobulata* fairly so. I took some *Pieris napi* large and very dark. The weather is very unsettled, sleet is falling to-day, and a gale is blowing. I can do little till it gets warmer. I hope to have a new Tortrix for you in July; I have seen one taken last year, and hope to obtain it.—Id., May 16th, 1891.

Larvæ.

Epunda nigra.—The larvæ of *Epunda nigra* are just beginning to feed on fine grasses in stony places along the railway bank. In 1889 they were abundant at the end of April. I find them do best on whitethorn in confinement, but they are not an easy larva to rear, any damp food proving fatal. It is still a darker green than *lichenea*, with a yellow instead of white spiracular line. They remain like this till the last moult, after which it is impossible to attempt a description. No two larvæ are alike, they exhibit every shade of green, brown, slate, red, and rarely, brilliant rose colour, and every possible combination of these colours, even in the same larva, some being beautifully chequered all over. I can assure you that 100 or so full-fed larvæ are a sight not easily forgotten.—E. R. Curzon, Howth, April 10th, 1891.

M. artemis.—I am busy collecting *M. artemis* larvæ here in Waterford, but the cold weather is keeping them very much back.—Id.

Neuroptera.

Last autumn I saw a female of *Æschna cyanea* settling on a bank overhanging a pond in Epping Forest, it moved several times, and remained at each place three or four minutes, and kept applying the end of its abdomen to the bank all the while *as though* depositing its ova. It was so intent upon the operation that I was able to capture it with my hand. I took off some of the mould from the bank, but could discover no ova in it. What was this dragon-fly probably doing?—F. Milton, 164, Stamford Hill, N.

1 JUN. 91

EXCHANGE.

Duplicates.—Pupæ of Philanthiformis. Desiderata.—Ova, larvæ, pupæ: or bred insects for renewing.—H. Murray, Lowbank Villas, Carnforth.

Duplicates.—H. pomatia, H. cantiana, Buliminus obscurus with variety alba, Clausilia laminata, Cochlicopa lubrica, Cœcilianella, acicula. Desiderata.—H. revelata, H. fusca, Buliminus montanus, Pupilla secale, Clausilia biplicata, Cochlicopa tridens, Stenogyra goodallii, or other land shells (British) not in collection.—E. W. Swanton, Doddington, Sittingbourne, Kent.

Duplicates.—Podalirius, Alexanor, Apollo, Jasius, Cassandra, Cleopatra, and many other French butterflies in very fine condition. Desiderata.—Numerous British Geometræ and Noctuæ, or larvæ or pupæ.—T. Maddison, South Bailey, Durham.

Exchange.—Algerian Coleoptera, and numerous duplicates of shells, in exchange for land and fresh water species of the latter, mostly exotic, not in collection. Wanted principally: Gen. Bulimus, Diplommatina, Alycoes, Clausilia, Pupa, generally Helicidæ.—C. J. Ancey, Administrateur-adjoint à Boghari, Algeria.

Duplicates.—American Lepidoptera and Coleoptera. Desiderata British or Exotic Bombycidæ and Sphingidæ.—Miss Emily Morton, Newburg, New York. New Windsor Delivery, U.S.A.

Exchange.—I should be glad to exchange rare vars. of H. nemoralis and hortensis with anyone who has paid special attention to these shells.—Rev. J. W. Horsley, Holy Trinity Vicarage, Woolwich.

Duplicates.—Boreata, Monacha, and others. Desiderata.—many common species to renew.—A. E. Hall, Norbury, Sheffield.

I have Vol. I of Ent. Weekly Intelligencer in duplicate, it is in good condition and will exchange it for well got Lepidoptera. I would be glad to purchase or otherwise Entomologist Part 100, Vols. 2-5, and Ent. Annual for the years 1866-68 or 70 to end —A. E. Hall, Norbury, Sheffield.

American Lepidoptera. cocoons and chrysalides of same. American Birds' eggs, Indian relics snd fossils for Exotic Lepidoptera other than European. South American, African and Australian especially desired.—L. W. Mengall, Reading, Pa., U.S.A.

Duplicates.—Ulmata, Tristata, Rurea, Chrysitis, Arcuosa, Affinitata, Decolorata, Neustria and ova. Desiderata very numerous.—W. Brooks, The Gardens, Grange Hall, Rotherham.

Duplicates.—Davus, Tithonus, Blandina, Ulmata, Bipunctaria, Carpophaga, Farinalis, Bisitata. Desiderata. Many common species, pupæ preferred.— John E. Robson, Hartlepool.

TO CORRESPONDENTS.

Owing to great pressure on our space we are obliged, again, to leave over the Supplement.

Conchological Section. All communications for this section should be sent Mr. T. D. A. Cockerell. 3, Fairfax Road, Bedford Park, London, W., who will also name specimens and answer enquiries for any subscriber.

Mr. G. A. Lewcock, 73, Oxford Road, Islington, N., Hon. Sec. City of London Ento. and Nat. Hist. Society, represents the Magazine in London, and conducts the section of Coleoptera

New subscribers can have such portions of the Supplements as appeared last year as follows: The British Hawk Moths, 24 pages, 6d; Hand-Book of British Spiders, 32 pages, 3 plates, 1s.; British Pterophori, 24 pages, 6d. Subscriptions, and all communications other than as above, to be sent to John E. Robson, Hartlepool.

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Lepidoptera.

COLLECTING IN THE TROSSACHS IN SEPTEMBER, 1890.

BY A. ADIE DALGLISH.

To the lover of rich colour and fine scenery, September is perhaps the most appropriate month of the year to witness nature adorned in her fairest garments. The rich browns, and bright yellows of the foliage; golden harvest fields dotted over the landscape, and the hills and moorlands purple with the heather in bloom. Two years ago in the month of August, I spent my holidays in the far-famed Trossachs. This year, a month later, I again visited that beautiful district. I was staying with my brother at the Brig-o'Turk, a picturesque little highland clachan, situated at the foot of Glen Finlas. The weather during my stay was of the finest description, and the insects, though not very numerous could not be grumbled at.

Among the butterflies *Chortobius pamphilus* still lingered to grace the heaths with its jerky flight. *Vanessa urticæ* was often observed winding its way over the heather; and a solitary specimen of *Polyommatus phlœas* was captured.

Of the Noctuæ, *Nonagria fulva* must take the lead, being most abundant wherever the ground was marshy, there it was gliding silently along at dusk in a phantom like fashion; a difficult insect to capture however, for if you miss it with your first stroke, it will plunge frantically into the long grass, where search is needless, or circle about with great speed, when chase is useless for you are sure to get tripped up, and perhaps find yourself in a rather uncomfortable situation. *Triphæna pronuba* and *orbona* were also common, but in a wretched condition, *Xanthia cerago* and *X. silago* occurred at the sallows, and our good friends *Xylophasia polyodon* and *Caradrina cubicularis* did not fail to make their appearance, *Hadena protea* could be taken commonly from the trunks of the alder; and a couple of *Agriopis aprilina* were procured in the same manner. An almost undistinguishable type of *Cleantha solidaginis*, made its appearance in the net one day when we were sweeping for larvæ, and the same evening a fine *Agrostis lucernea* came to the lamp in our room. Single specimens of *Hydrœcia nictitans*, and *micacea*, *Apamea fibrosa*, *Noctua neglecta*, *Anchocelis rufina* and *Cosmia trapezina* were taken during our stay.

Of the Geometræ, *Epione apiciaria* occured in some numbers, *Ennomos tiliaria* was seen several times, but only one fell to the net. *Oporabia dilutata*, *Laventia olivata*, *Eupithecia sobrinata*, *Thera variata*, *Ypsipetes elutata*, *Melanthia rubiginata*, *Cidaria immanata*, *C. russata*, and *C. pyraliata* were common; and one *Geometra papilionaria* was caught, (rather late in the year for this party).

Several Tortices could be taken, all of which were common, though variable species. *Teras caudana*, *Dictyopteryx contaminana*, *Pædisca solandriana*, *P. sordidana*, *Peronea variegana*, *P. ferrugana*, and *Grapholitha nigromaculana*.

On several occasions we swept the heather for larva and obtained a good number of *Anarta myrtilli*, *Bombyx rubi*, and a large number of *Eupithecia* which I cannot name at present. *Pygæra bucephala* was also feeding in large colonies, divesting great branches of the oaks of their foliage.

Glasgow, 1891.

LIST OF THE LEPIDOPTERA OF ABERDEENSHIRE AND KINCARDINESHIRE.

BY WM. REID, PITCAPLE.

(Continued from page 94.)

Odontopera Bidentata.—Common everywhere, and variable, very dark varieties are often taken.

Crocallis Elinguaria.—Rather local, but abundant in many places, exceedingly variable.

Himera Pennaria.—Recorded from Aberdeen by Mr. Clark (Prof. Trail [illegible] "Lep. of Dee.")

Phigalia Pilosaria. —Widely distributed, and common in many places, my brother has taken this species plentifully, he finds them sitting on beech trunks.

Amphidasis Betularia.—Widely distributed, and not rare, I never saw the black variety here about.

Hemerophila Abruptaria.—Has only been taken near Stonehaven.

Cleora Lichenaria.—Rare, Banchory, and Monymusk.

Boarmia Repandata.—Common, we only get the light bluish grey form here, excessively abundant about Banchory.

Gnophos Obscurata.—Common at Muchalls. I have taken it flying by day.

Dasydia Obfuscata.—Fairly common on moors almost everywhere, rather lighter in colour than the Perthshire examples.

Psodos Trepidaria.—Common on hills near Braemar, above 2,500 feet (Prof. Trail's "Lep. of Dee.")

Geometra Papilionaria.—Braemar and Fyvie scarce, but common at Banchory. Mr. Milne, of Aberdeen, captured, and saw them flying in abundance near Banchory in 1888. The following year I went with Mr. Milne to the same place, but we only captured a few, it was also very scarce last year, 1890.

Ephyra Punctaria.—Very rare, Pitcaple, Banchory, Aberdeen, &c.

Ephyra Orbicularia.—I have captured three or four in my own garden at Pitcaple, it has not apparently been taken anywhere else in Scotland.

Ephyra Pendularia.—Not rare in birch woods, and widely distributed. I have taken the larvæ in Pittodrie Woods by beating the birches.

Venusia Cambricaria.—Rare, Haslehead and Pitcaple.

Acidalia Bisetata.—Formerly taken near Peterhead, by the late late Rev. I. Yuill.

Acidalia Incanata.—Discovered near Stonehaven several years ago by Mr. Tait.

Acidalia Remutata.—Peterhead (Rev. I. Ajuill.)

Acidalia Fumata.—Abundant above Braemar, has not yet been taken in any other district of Aberdeenshire.

Acidalia Aversata.—Abundant in marshy woods.

Var. Spoliata.—Also common, but more local.

Timandra Amataria.—Very local, found near Burnharvie.

Cabera Pusaria.—Abundant and variable.

Cabera Rotundaria.—I have a beautiful specimen which I captured in Pittodrie Wood in 1887.

Cabera Exanthemaria.—Common, but more local than *Pusaria*.

Macaria Liturata.—Rather local, but widely distributed and not rare sometimes in fir woods.

Halia Wavaria.—Abundant, but very local, in some districts it is hardly ever seen, e. g., Pitcaple.

Scodiona Belgiaria.—Rather scarce, but generally on all moors.

Fidonia Carbonaria.—Not uncommon on the hills near Braemar.

Fidonia Atomaria.—Excessively abundant and variable.

Fidonia Piniaria.—Also very common. We only get the ♂'s with white ground colour. The ♀'s are small and dark, quite different from the English.

Fidonia Pinetaria.—Locally common. Braemar, Derncleugh, &c.

Abraxas Grossulariata.—Abundant about Aberdeen, Woodside, Old Meldrum, &c. Also common at Pitcaple (introduced). Before I introduced the species it was one of our rarest Lepidopterons, now it is too abundant, and the sexes show a curious tendency to dimorphism.

Lomaspilis Marginata.—Local, but not rare. All our specimens tend to have a continuous band across the centre.

Hybernia Aurantiaria.—Not common.

Hybernia Progemmaria.—Local, but not rare. We don't get the very dark form here.

Hybernia Defoliaria.—Not rare about Pitcaple, but rare elsewhere.

Chematobia Brumata.—Excessively abundant.

Oporabia Dilutata.—Abundant everywhere; variable.

Oporabia Filigrammaria.—Local, and not very common.

Oporabia Autumnaria.—Rare. Near Banchory and Braemar.

Larentia Didymata.—Excessively common. Abundant on Ragwort flowers just before sundown.

Larentia Multistrigaria.—Abundant.

Larentia Cæsiata.—Swarms on all moors, rises from the rocks and stone fences in hundreds at the approach of the collector. I have often taken them almost black.

Larentia Salicata.—Rather scarce, but not rare. A very "skittish" species, and not easily approached.

Larentia Olivata.—Local. Common on Ragwort and other flowers at night. Very easily taken.

(To be continued.)

THE PTEROPHORINA OF BRITAIN,

BY J. W. TUTT, F.E.S.

(Continued from page 46.)

O. distans, Zell.—This pretty little double-brooded species appears to be almost entirely restricted to the coast sands, and to the "Breck" district, which is practically an old coast line; it is therefore very local, and rarely occurs in any abundance.

SYNONYMY—*Distans*, Zell. "Isis" (1847), 903, "Linn. Ent. Zeit.," VI., 345; H.-S., V., p. 372; Frey 408; Tutt, "Ent. Record," I., 94. *Tristis* var. b. Zell. "Isis" (1847), 38. *Didactyla*, Haw., 477: This species was added to the British list by Lord Walsingham, who captured imagines near Thetford, in 1868. Dr. Jordan first referred to them in the "Entomologist's Monthly Magazine," Vol. VI., p. 122, as *O. lætus*. They retained this name until some 12 years after, when Dr. Jordan wrote:—"The *Oxyptilus* caught near Thetford and in other parts of our Eastern counties is changed from *lætus* to *distans*. There is no doubt about this. Prof. Zeller first pointed out the mistake to me several years ago; *lætus* is a smaller insect, and indeed very different" ("Entomologist's Monthly Magazine," Vol. XVIII., p. 122). In the same volume (January, 1882) Mr. C. G. Barrett, p. 178, writes:—"*Distans* is larger, darker in colour, and coarser-looking than *lætus*, but I cannot find any reliable distinctions in *markings* between them, that is, between typical *distans* and *lætus* received from Professor Zeller. The original British specimens from near Thetford, to which the name *lætus* was applied, were *second-brood* specimens taken late in July, 1868, and these were lighter and brighter coloured than those of the first brood, which was not met with, either in that or the following year. I remember very well the day—June 4th, 1870—when the first specimens of the *first* brood were taken, when about thirty fell to two nets at Brandon. Of these, the majority were larger and decidedly darker in colour than those of the second brood, and agreed accurately with types of *distans*; and whenever, in subsequent years, I collected at Brandon in June, I found these typical *distans* mixed with specimens inclining towards the brighter-coloured form, of which the second brood was mostly composed. There can, therefore, be no doubt whatever that Dr. Jordan is correct in applying the name *distans* to our insect, and, I think, very little doubt that *lætus* is a variety of the same species. I admit a little doubt on the point, seeing that a very few specimens have been taken at Folkestone of an *Oxyptilus*, which agrees absolutely with Continental *lætus*, but is rather paler than any Brandon specimens I have seen, and, as far as I know, the *distans* form has not been taken at Folkestone. Probably this only requires looking for, but it would, doubtless, be rare in that neighbourhood. I think I am at liberty to say that Prof. Zeller is also now of opinion that *distans* and *lætus* form but one species." That *lætus* is simply the second brood of *distans* appears to be perfectly certain. The first brood at Deal is dark like the Brandon and Thetford *distans*, while the second brood is much paler and generally smaller. I have specimens from Dover and Folkestone in my collection quite as dark as the darkest Norfolk specimens. But the month following Mr. Barrett's explicit note on the species, Mr. South wrote his first instalment of the "Contributions to the history of the British Pterophori," and apparently in direct opposition to Mr. Barrett's views of the previous month, stated :—"The insect taken in Norfolk, and hitherto referred to this species, should be labelled *distans*, Zell., in our cabinets. I was fortunate enough to meet with the true *lætus* in North Devon during the last week in July,* but only secured three specimens. I understand that in Kent and North Devon are the only known British localities for *lætus*, and at neither place has *distans* been seen. On the other hand, in Norfolk, at the locality for *distans*, *lætus* does not appear to occur" ("Entomologist," Vol. XV., p. 35). Mr. South then entered into minute differences and considered that they formed "trustworthy points of distinction." This statement entirely ignored all the work that had been done by Prof. Zeller, Dr. Jordan and Mr. C. G. Barrett ; but after waiting several years Mr. South wrote : — "Examination of an extensive series of *O. distans* has convinced me that I was wrong in my conclusion (that *distans* and *lætus* were distinct). The points of difference I relied on will not hold, and *lætus* must sink as a species" ("Entomologist," Vol. XXII., p. 33). Thus after seven years, Mr. South had arrived at exactly the same result that Mr. Barrett had reached a month before Mr. South commenced to write about the "plumes", by exactly the same process—the examination of a long series. There is no doubt, I think, but that Haworth's *didactyla* (taken in Norfolk) is synonymous with *distans*, Zell. In the "Entomologist's Record," Vol. I., p. 94, I have written the following: "Haworth describes his species as: '*Alucita* (the spotted moth plume). Alis patentibus sordide ferrugineis, fascia punctisque albis, anticis bifidis, posticis trifidis. Habitat apud nos valde infrequens. Etiam in Com. Norf., Rev. J. Burrell.'" This reference to Nortolk is very suggestive of *distans*, and the description "sordide ferrugineis" could only be applied to this of our British species; *distans*, too, is *par excellence* a Norfolk species. Haworth's remark, after describing *parvidactyla*, is very interesting, and affords the strongest possible clue to his *didactyla* and *heterodactyla*. He writes of *parvidactyla*:—"This is the smallest of our "Plume" moths, and it is also one of the rarest. Its characters are almost exactly the same as in the two preceding articles; yet its dimitutive size as a species renders it very distinct." This remark, coupled with the description and locality he gives, seems to settle the species conclusively as the species we know now as *distans*, Zell. Of course *didactyla*, Haw., sinks as a synonym of *distans*, Zell., there being already a *didactyla*, Linn."

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* The very date Mr. Barrett had previously given for the second brood=*lætus*.—J.W.T.

Imago—The anterior wings of this species are divided into two lobes, the tips of the lobes acute. The colour pale ochreous-brown, with the costa rather darker, but the extreme edge of the costa, near the tip, much paler, almost white. There are three more or less abbreviated fasciæ passing transversely across the anterior wings—(1) a pale crescentic fascia at the end of the fissure; (2) a pale, broad fascia, made of two crescents placed obliquely and forming an acute angle near the termination of the fissure; (3) a narrower fascia forming a crescent. Fringes the same colour as the wings. Posterior wings brown, with paler fringes, divided into three plumules, the third having a tuft of black scales beyond the middle, and a few white scales at the base. Head and thorax colour of fore wings; abdomen colour of hind wings. Mr. C. G. Barrett ("Entomologist's Monthly Magazine," Vol. XXV., p. 431) writes:—"Its pale fasciæ are so placed as to resemble crescents, especially when the insect is alive and at rest." Zeller's diagnosis of the species is as follows:—"*Distans*, Z. (p. 345)—Major, alis anterioribus luteofuscentibus, laciniis obsolete albido-bistrigais, arcis laciniæ posterioribus marginali albido; digiti tertio tertis dorsa longe ante apicem atro-squamato (♂ ♀)".

Variation—The species exhibits a slightly dimorphic condition in its two broods; the first brood *(distans)* being generally darker and more strongly marked; the second brood being smaller, paler, and brighter coloured, but with rather less distinct markings. The paler form is the var. *lætus*. Some of the first brood occasionally are pale, while some of the second brood frequently approach the dark coloration more generally associated with the early brood. The comparative rarity of the early brood led to the species being only known for so many years as *lætus*. The synonymy of var. *lætus* is as follows:—*Lætus*, Zell., "Isis" (1847), 903, "Linn. Ent. Zeit.," VI., 346; H.-S., V., p. 373; Mill. "Icon." I., 333, Plate XXXIX., 7-11. *Lætidactylus*, Brd. "Ann. Soc. Fr.," 1861, 34, Pl. II., 7.

Larva—The larva of this species is unknown in Britain. In the "Entomologist's Monthly Magazine," Vol. VI., p. 122, Dr. Jordan writes:—"On the Continent *O. lætus* feeds on the flowers of *Andryala sinuata;* it is probable that in England some species of *Hieracium* would be chosen." Mr. Stainton, Vol. VI., p. 36, mentions that Mons. Millière had noticed the larva in his "Iconographie," Vol. I., p. 331, pl. 39.

Pupa—Of the pupa also very little is known. Mr. Stainton ("Entomologist's Monthly Magazine, Vol. VI., p. 36) writes:—"On the 6th of May Monsieur Millière sent me from Cannes a larva on *Andryala sinuata*. This is a Composite plant, with the underside of of the leaf clothed with fluffy down. The larva, which was that of a plume already noticed by M. Millière in his "Iconographie," Vol. I., 331, pl. 39, under the name of *Oxyptilus lætus*, had already assumed the pupa state before it reached me. But it had almost completely buried itself in the fluffy down on the under side of one of the leaves, and hence, instead of the pupa being fully exposed, as is usual with the "Plume" pupæ, whether they are naked like *fuscus*, or hairy like *pentadactylus*, this was almost as well concealed as if it had been in a cocoon, only a portion of the head end and a little piece of one side being left exposed to view."

Time of appearance, &c.—The species, as previously mentioned, is double-brooded, occurring first in May and June, and again in July and August. My own dates at Deal seem to be pretty continuous from about the 28th of June to August 10th, the time of the year I the two broods, although there is no doubt they are distinct enough, principally spend there, and so far, I have been unable to distinguish the dates overlapping in different years. In Vol. IX. of the "Entomologist's Monthly Magezine," pp. 18-20, Mr. C. G. Barrett obtained the first brood at Thetford in the middle of June, flying sparingly in the afternoon sunshine; whilst he obtained the second brood in the beginning of August, flying at sunset. Mr. Warren ("Entomologist's Monthly Magazine," Vol. XXII., p. 255) found the species "in June and on through the summer in profusion" at Tuddenham. It was taken in some abundance in July, 1889, at Dover. Mr. Purdey records it "on June 8th, between Dover and St. Margaret's Bay, and on July 13th a few more at Deal, at the Sandwich end of the sand hills" ("Entomologist," Vol. XXIII., p. 346).

HABITAT—I believe the species is restricted in England to coast districts and the "Breck" district in Norfolk and Suffolk. It is more especially found on sand hills quite near the sea. It has been taken on the Devon coast, on various parts of the Kent coast, and several localities in the "Breck" district, Brandon, Thetford, and Tuddenham being its chief centres. On the Continent it is not uncommon locally in central and southern Europe, but it appears to be unknown in the north.

(To be continued.)

NOTES FOR BEGINNERS.—MICRO LARVÆ FOR THE MONTH.

BY GEO. ELISHA, F.E.S.

The hot sultry days of July have at times an enervating influence hard to resist, and makes one inclined to be indolent, but many species occurring this month feed up rapidly and are soon gone, so we must keep steadily on, and endeavour to do our collecting in the early morning, finishing by noon, for larvæ are then pretty plentiful, after which many drop to the ground by their silken threads during the scorching heat of midday, coming up again towards evening.

Many species occurring last month are to be obtained the beginning of this, and others which are to be seen sparingly now, may be taken in abundance a month or two later on, so we will now more particularly give our attention to a few of those only found at this time.

If we examine the Maple trees we shall now find some of the leaves rolled up from the tip to about half of the leaf, on opening which a pale green larva with brown head will be observed; this is the larva of *Grac. semifasciella.* On the neighbouring ash trees some of the shoots will be found drawn together and the leaves partly eaten away, if on carefully picking off the shoot we find an extremely lively bright green larva with dark dorsal line, it would be the larva of *Zell. hepariella*, they must be taken very carefully for they drop to the ground directly the shoot is touched; when full grown they spin up among the leaves, making pure white cocoons, the imago appearing towards the end of the month.

The red berried bryony (*Bryonia dioica*) growing in such luxuriance all over the adjoining hedge, next claims our attention, for the shoots are drawn together into a ball by the larva of *P. rugosana*, these larva spin hard boat shaped cocoons, not changing to the pupa till the following spring. On some of the leaves of the hawthorn over which the bryony is growing we cannot fail to observe the very curious cases of *Col. siccifoliella*, which are easily detected by the brownish blotches on the leaves. The case of this species is the most interesting of all this large family of case making larva, and is formed by the larva cutting off four or five times as much of the leaf as is required for its case, folding one edge over and lining it wlth silk for its habitation, the other part remains extended, which, when dry, exactly resembles a withered leaf; when full fed they fix their cases to the stems firmly, changing to pupa in the spring. We shall also notice some of the leaves of the hawthorn have the edges turned over into a sort of cone, on opening some of these the pale greenish larva of *Ornix anglicella* will be seen busy gnawing the leaf, many of these cones will be found empty, for the larva after eating out the inner side of one cone leaves it, and constructs another. While looking for these cones we shall probably notice other leaves which have silken threads drawn across the upper surface, causing the leaf to contract slightly, and underneath an open web a little lower will be seen a slender lively larva, attenuated to each end, yellowish, with reddish brown subdorsal lines, and brown head, this would be the larva of *Swam. pyrella.* On the neighbouring birches feeding in exactly the the same manner, the pale green larva with dark dorsal line of *Swam. griseocapitella* are sure to be observed if looked for.

We continue our pleasant walk, which during this month and the next is most enjoyable before the sun gets very high, but have not proceeded far when a large clump of mugwort *(Artemisia vulgaris)* attracts our notice, and we are soon busy filling a tin box with the mined, bladdery looking leaves containing the larva of *Grac. omissella*, these leaves are best put into a flower pot, tied over with a piece of calico and placed on the ground, with a piece of glass a little raised over the top to keep off superfluous wet, when a fair number will be bred. Now we will take a few of the tops of the *Epilobium hirsutum* growing at the side of the ditch, for they contain the larva of *Lav. fulvescens*, for our series of this insect requires renewing occasionally. We must also take some of those mined leaves of the woody nightshade *(Solanum dulcamara)* growing in the hedge, for they contain the larva of *G. costella.*

We will now again make our way to that damp spot where the *Epilobium angustifolium* is growing freely, for now is the time when the larva of *Lav. raschkiella* is to be found mining the leaves; these larva feed up rapidly, four or five days suffice from the time they begin mining the leaf to the time they are full fed and quitting it to spin up among the rubbish, many of these keep coming out during August, but the majority do not emerge till the following June and July, so that in breeding them the rubbish at the bottom of the cage ought not to be disturbed. The leaves of the alder are now being rolled up by the larva of *P. immundana*, and some of them mined by the larvæ of *Lith. alnifoliella* and *Stettinella*, another larva is also rolling up the leaves longitudinally, viz.: *Grac. elongella*, which is whitish green with dark dorsal line. The seeds of the cowslip *(Primula officinalis)* should now be examined for the larva of *E. ciliana*, and the dwarf sallows in open heathy places for the larvæ of *P. hastiana*. The larva of *T. mediana* are at this time to be found among the seeds of various umbelliferæ, and the larva of *Œ. dentella* in seeds of *Cherophyllum* on dry hedge banks.

In sandy places on broken ground by the sea shore where the common mallow *(Malva sylvestris)* is growing commonly, the flowers and seeds should be examined at this time for the larva of *Gel. vilella*, which fixed on the flowers when young, and afterwards on the unripe seeds. When small these larva are whitish, gradually becoming a dull pink when full fed, I have only found them in one long straggling locality, but in that one place have seen them at times swarming on every plant. The sea buckthorn *(Hippophœ rhamnoides)* a shrub that on this broken ground near the sea shore cannot fail to attract our attention at this time, for the terminal shoots are twisted and distorted by the larva of *Gel. hippophaella*, these larva are pale yellowish green with black spots and and head brown, very local, not always to be seen where the food plant is growing. The sea spurge *(Euphorbia paralias)* which is generall to be found where the sea buckthorn is growing, must at this time be examined, for some of the tops will appear brownish and drooping, this is caused by the larva of *S. euphorbiana* which feed inside the top of the stem. In the tops of the rest harrow the larva of *P. phœdactylus* may be taken commonly at the beginning of the month. The flowers of the ox eye daisy *(Chrysanthemum leucanthemum)* should be examined now for they are out at the full, when some will be observed having a few of the florets drawn over and fastened down with silk, these should be collected for they contain larva of a few species of *Sciaphila*, two of which, viz.: *pasivana* and *sinuana* I have repeatedly bred many specimens. In places where *Glyphipteryx fischeriella* occurs the seed heads of the cocks foot grass *(Dactylus glomerata)* should be gathered, from which a beautiful series of the insect may be bred.

122, Shepherdess Walk, N.

THE GENUS ACRONYCTA, AUCT.

As I am wholly responsible for the citations in Mr. Butler's paper, which Mr. Lewcock complains of (pp. 133-134), I should like to say a few words in explanation.

(1.) It is an established rule in nomenclature that when a new name comes into use, the person who first proposes that name in a recognized publication is to be cited as its author. Zoologists, as a rule, cite only the author of the specific name; while Botanists usually cite the author of the binomial. To be precise, it is necessary to cite both, the first within brackets, unless, of course, the species was first described under the same generic name as is now used for it, when the author of the species and of the binomial are the same.

(2.) It is obvious that when a new name is published its author must be assumed to be he who signs the article in which it appears, *in the absence of evidence to the contrary.*

(3.) Consequently, in quoting the new binomials which appeared in the "Ent. Record," I had no option but to give the authors' names as I did. If the Editor is really responsible, let it be so stated, and we can quote accordingly.

(4.) Of course, I hold most strongly that an Editor has no right to alter the nomenclature of his contributors without expressly stating that he has done so. Should he make such alterations without explanation, and the contributors are unwilling to stand responsible for them, they can only set matters right by publishing the facts. This Mr. Lewcock has now done, and his name need no longer be quoted for the binomial in question.—T. D. A. COCKERELL, May 29th, 1891.

THE GENUS ACRONYCTA AND ITS SUB-DIVISIONS VIMINIA, CUSPIDIA, AND BISULCIA.—Mr. Lewcock is right in his remarks *re* the genus *Acronycta*. No one has ever worked out the genus *ab ovo* as Dr. Chapman has done, and no author has ever proposed sub-divisions based on fundamental distinctions agreeing with *Viminia*, *Cuspidia*, and *Bisulcia*. Dr. Chapman has had to criticize the superficial paper on the genus, published by Mr. Butler in the "Trans. Ent. Soc. Lond.," 1879, and I would kindly hint that this criticism is the root of Mr. Butler's active opposition to Dr. Chapman's sub-genera.

Mr. Butler well knows that as matters now stand, Hübner's *Pharetra*, *Triæna*, and *Arctomyscis* respectively have no connection with Dr. Chapman's sub-genera, as Hübner's species overlap in every instance, and *Arctomyscis* does not even contain the type of *Bisulcia*.

I must own I do not see, if Hubner's genera are so bad, why Mr. Butler should in future "be quoted as the author of the genera which Hübner has indicated." If these genera are to have a new sponsor, in the name of common sense let an author who understands his subject be held responsible. So far as I am concerned, and until I can see a more satisfactory reason than the "*ego*" of Mr. Butler, I shall continue to use them (Dr. Chapman's) as a testimony that names are subservient to science, and not science subservient to names. —J. W. TUTT, June 1st, 1891.

By the courtesy of the Editor I have been enabled to peruse the foregoing notes, and with his permission add a few remarks to the controvessy. Mr. Cockerill, according to the theory he advances, has evidently erred in placing my name after the term *Cuspidia.* If the so-called Laws of Priority still hold good, and, in the absence of a proposer, the person who first applies the term to a class of insect in a generic sense is to be declared the sponsor, let us keep to the rule. By referring to page 130 of the Record, under the signature of Dr. Buckell (dated June 2nd, 1890), and page 136, Rev. B. Smith (June 30th), two instances of usage prior to my report will be found. It must, therefore, be plain to anyone that the "Bibliography" is not drawn up according to the Entomological "Cocker." Respecting other assertions, and the inferences drawn therefrom, I really must decline to entertain them.—G. A. Lewcock.

The puzzling and perplexing errors referred to above might appear to have been specially contrived for the bewilderment of the future synonymist, and it must be distinctly understood that we do not endorse all the statements contained in the communications of our esteemed correspondents Briefly stated, the case stands thus:—

Dr. Chapman, in Magazine No. 1, divided the genus *Acronycta* into three groups, from certain characteristics observable in the pupal stage. To these groups he gave names, but he did not, in doing so, propose to create new genera, and as a matter of fact he has not in any case, used these pupal terms in a generic sense. Netherless the terms have crept into use, as if of generic value, and their authorship attributed, not to Dr. Chapman, but to three other gentlemen mentioned in "Bibliography" of the same Magazine.

Mr. A. E. Butler, in Magazine No. 2, referring to a former division of the genus by Hubner, and to a paper by himself on the same subject printed elsewhere, states that Hubner's names have priority over the new names.

Mr. Lewcock, in Magazine No. 3, (in which he has editorial responsibilites), very properly repudiaties the authorship of the term *Cuspidia*, and this he does without expressing any opinion as to the desirability of dividing the genus, his encomiums being given to the manner in which Dr. Chapman had worked out the life histories. Mr. L. shows further, in the above note, that the term *Cuspidia* did not first appear over his name.

Mr. Tutt, in the next place, in his new work on Varieties, uses Dr. Chapman's pupal terms, but only as of sub-generic value giving that gentleman's name as the authority for them. But Mr. Tutt, in the above note, assumes more than has been expressed by Dr. Chapman, who still calls the genus *Acronycta*. As *sub*-generic terms are not used, we do not follow our friend when he says he will "continue to use them."

There is nothing we deplore so much in Entomology as the constant and purposeless alterations in nomenclature, and in the present confused state of the names of Lepidoptera, it would be dreadfully embarrassing for an Editor to give up control over those used in the pages of his magazine, whilst a foot-note appended to every paragraph containing alterations would be a reflection on the intelligence of his contributor. The case given above is a strong illustration of the necessity of what we have so often urged in the "Young Naturalist" and elsewhere, viz.: that there should be a recognized authority for nomenclature, and that no new name, or alteration of an old one, should be accepted without the sanction of such authority. As matters stand at present, instead of names being made subvervient to science, science is made subvervient to nomenclature, and so it will be while purposeless changes are insisted on by those who ought to know better.—Ed. "B. N."

Notes.

D. capsophila, &c.—*D. capsophila* has been out some days, and I have taken several. If the weather would change I would be able to get *Barrettii*. *L. ægeria* is common here.—E. R. Curzon, Dublin, 4th June, 1891.

American and English Lepidoptera.—What lovely little things your *Zygenidæ* are. *Filipendulæ* is exquisite, so is *Geryon*. Your *Leucanias* resemble our Californian forms in their richer colours, except *Impura*, which is almost a fac-simile of our *Pallens*. Our *Agrotis C. nigrum* is very like your *Noctua C. nigrum*, but the colours are quite different when compared, and yours is a much smaller and slighter insect. Your *Triphæna* are fine insects, of which we have but one representative, *Chaudingi*, about the size of your *interjecta*.—Emily L. Morton, New York.

Leucania lithargyria, var.—In July last I bred a singularly curious aberration of *L. lithargyria* from a larva collected in the preceding April at Delamere Forest. It varies from normal *lithargvria* in having its hind wings pale silvery-gray, broadly margined with a dark gray band, as clearly marked as some of our "Underwings," which in its hind wings it somewhat resembles. It has been pretty well exhibited, and more than one has suggested it might possibly be a hybrid, a view I do not concur with, otherwise out of the score of larvæ from which the specimen was bred, I think it extremely likely I should have had more if they had been hybrids, as they were all collected in the same lane. It was one of the last pupæ to emerge; I was getting suspicious about any more coming, for I always look diffidently on the tail-end of my pupæ, nearly always setting the first comers, which invariably are the finest insects. I was certainly fortunate in getting this specimen, indeed I was really in luck's way, for on the very evening I got the larva, I obtained a single larva of *Aplecta nebulosa* on mountain ash, which came out a splendid black variety.—J. Collins, Warrington.

Extraordinary abundance of Plutella xylostella.—*Plutella xylostella* is at all times a common insect, but this year it has appeared in countless numbers. An occasional specimen turned up during last week, but on the 24th inst. they appeared in thousands in the streets, on the quay side, in houses, and in fact everywhere. At night, in the country, every step one took they rose in clouds, and it was simply an impossibility to do any micro collecting, with the single exception of *Plutella xylostella*. Yesterday added to their number considerably, and I counted 50 sitting on the wall of my house yard, and doubtless there were as many more which I did not observe. The 24th inst. also ushered in our old friend *Plusia gamma*, much to the delight of our amateur collectors, who managed to fill every box at the Campion flowers, but, "*experentia docet*," they will get to know better in time. —J. Gardner, Hartlepool, 26th June, 1891.

Larvæ.

Irish Notes.—I have little fresh to tell you. The weather continues very bad; gales of wind and rain every day render anything like work quite out of the question. I have a nice lot of *agathina* larvæ feeding well, and am also breeding *impluviata*. I have also a long series of very red *meticulosa*. I have a brood of *exoleta* feeding. Among smaller species I have a lot of *udmanniana* larvæ and *Gel. leucomelanella* mining in the shoots of Silene ; the larva is dirty green, with a black head, it killls the shoot and ejects a quantity of yellow frass, but it is far from common. I am not sure whether the larva has been described or not. The cases of the common *Psyche* are abundant this year, as are also those of the *Solenobia* on lichen among the rocks, but no one has ever bred the ♀. *E. lineolalis* is scarce this season ; I find it under *Lichen geographicus* on the rocks.—E. R. CURZON, Dublin.

Obituary.

ROBERT GILLO.

It is with deep regret that we record the death of our esteemed contributor, Mr. Robert Gillo, of Bath, which took place on April 9th, 1891.

Robert Gillo was born in the City of Bath in January, 1842, and was educated at Prior Park Roman Catholic College. In his childhood he became an observer of nature, and spent much of his spare time in the fields and lanes of the beautiful country surrounding his native city. He developed a taste for art, and when about nineteen years of age, after preparation at home, he passed to South Kensington, where his career was very successful. For a time he followed the profession of art teacher. About 1864 he settled in Bridgewater, where he devoted himself to photography. Whilst residing in that town he married Miss Jane Sams Cogle, and there his only son was born. Eventually he became almost entirely engaged in the preparation of photographic slides for lantern use, chiefly of scientific objects. This branch of work deeply interested him, for it enabled him to increase and utilize his knowledge of natural science. In 1881 he retired from active participation in business and returned to Bath. But relaxation from the pressure of business engagements did not mean for him absence of occupation. From study in various directions he had obtained a large store of information. He was not unacquainted with Chemistry, Geology, and Mechanics, but it was in the use of the microscope and the investigation of Coleoptera that he excelled. Many a summer day did he spend in the search for specimens. This labour of love resulted in the formation of a valuable collection, prepared and classified with minute care. He was ever eager to welcome a brother Naturalist, and to seek and to give information on debated points. He was an active member of the Bath Microscopical Society, and served as one of its Vice-Presidents, and twice declined nomination as President. His name was down on their Rota card for a paper to be read on 7th April, on Sexual Bimorphism of British Beetles. It is probable the paper was never prepared, for he was confined to his bed for some months, and died two days after the day fixed for it being read. Mr. Gillo took a warm interest in this magazine, was a member of the Coleopterous section of the Exchange Club, and by his contributions to our pages and recommendations to his many friends, greatly assisted in placing it in the front rank on this subject. He was a pleasant and agreeable man in company, and we have lost a kind friend.

Arachnida.

Spider Notes.

The months that have just passed, and September and October, are perhaps more prolific in spiders than any others in the year. Collectors must now look sharp with leaf-shaking in woods, and moss and dry grass-shaking, because soon the green summer herbage will be springing and choking up their hunting grounds. He will then take to the sweeping net and umbrella

There is plenty of work for the latter now amongst the Gorze blossom, the small, rich, red little *Lingphia dorsalis* is now adult and abundant. The small, dark, black *Dictyna latens* can also be beaten from the Gorse, besides the swiftly-running, crab-like *Philodromus aureolus*, which often in its escape seizes a fellow captive to keep it company. Many others, young and old, will fall into the umbrella, and few of them will the beginner be able to identify In marshy places quantities of nice little things may now be found amongst the sedge roots, *Gongylidium bituberculatum* being perhaps one of the commonest; remarkable for the pair of rounded humps above the eyes, well calculated to render him (for the male only is thus developed) liable to a couple of headaches at once. Of the same genus, *tuberosum* is now adult, and its near ally *gibbosum* soon will be both found on the mud in marshy swamps. The peat Diving spider *Argyroneta aquatica* is adult towards the end of June. Try any stagnant (not stinking) are pools with a net, or rake about with a stick till something happens. I know of no definite method of capturing this fine, interesting spider.

Amougst the wheel-web specimens, the *Orbitelariæ—Epeira cornuta* may be found nearly adult in its little nest, constructed in the rush head on the margins of streams. A rarer though closely-allied species, *patagiata*, I am now finding in plenty, adult and young, in the Carlisle district. The dusk is the best time for the *Epeiridæ;* many of them do not construct webs till the evening, or at all events make new ones or mend old ones to intercept the gay and giddy moth, who will venture forth when any decent insect should be snoozing. How wonderfully nature has arranged all these little things for the benefit of her offspring. The fine, great *Cœlotes atropos* is adult, and to be found under stones in some parts of the country. I believe it will be abundant in all the northern counties.

Amaurobius fenestralis, a smaller species, closely allied to the common one in our out-houses, is abundant, and adult, under stones in the loose stone walls in the country round the town. In greehouses *Theridion tepidariorum* can be found, and her large buff or grey piriform cocoon; also the scarlet banded *Th. pictum* is beginning to construct her beautiful little tent-like domocile amongst holly bushes or other shrubs. Her near ally *Th. sisyphium (nervosum)* is also hard at work, in gorse, holly, etc. I really must stop however, for there is no end to the prattle of the arachnologist on the material whereof he may make much ado at this season of the year. Spiders begin to get scarcer this July and August.

If anyone would care to have a few of their captures named for them as Landmarks in classification I shall be happy to name them.—Rev. F. O. P. Cambridge, 5, Henry Street, Carlisle, May 30th, 1891.

Gleanings.

Plusia bimaculata, Stephens = P. verticillata, Guenee.—In the "E.M.M." for June, (p. 163), Dr. Mason gives the evidence which has proved that the insects recognised by these names are identical, and of which *Acuta*, Walker is another synonym. He states it is a species with a very wide range and that specimens are in the British Museum from many parts of Asia, from Africa, and from Australia. A Specimen of this insect, recorded as *Acuta*, Walker, ("E.M.M.," vii, p. 8,) was taken at Tunbridge Wells, in June, 1870. It was then stated that a single specimen from Congo, Africa, represented the species in the British Museum. We find *Bimaculata*, Stephens, in the list of Canadian Lepidoptera, so that it would appear to occur in North America also. It seems to be one of those species which has been blessed with several names, and recorded under each, to the mystification of all concerned.

Report of Society.

ENTOMOLOGICAL SOCIETY OF LONDON.

June 3rd, 1891.—Mr. Frederick Du Cane Godman, M.A., F.R.S., President, in the chair.

Mr. J. M. Ayde, of Somerford Grange, Christchurch, Hants, and the Rev. John Seymour St. John, B.A., of 42, Castlewood Road, Stamford Hill, N., were elected Fellows; and Mr. R. A Dallas Beeching was admitted into the Society.

Mr. E. B. Poulton exhibited living larvæ of *Endromis versicolora*, and commented on their habits.

Mr. W. F. H. Blandford called attention to the fact that the larvæ of *Liparis monacha* remained in small groups on the bark of the tree for about a week after emerging from the eggs, and that this fact was taken advantage of by the German foresters to destroy them. Also that he had himself verified the statement that uric acid can be detected in the malpighian tubes of insects. Mr. M'Lachlan agreed that the demonstration that the malpighian tubes were of the nature of renal organs was now satisfactory.

Mr. C. J. Gahan exhibited two species of Coleoptera that he considered to possess a mimetic resemblance, viz.: *Estigmena chinensis*, one of the *Hispidæ*, and a nondescript Lamiid allied to *Pemptolasius*. He called attention to a peculiar structure of the antennæ in the latter by which the resemblance was increased.

Mr. Tutt exhibited a hybrid between *Amphidasis prodromaria* and *A. betularia*, obtained by Dr. Chapman. Mr. Stainton commented on the fact that the two insects appeared at different times; and Mr. Tutt stated that the *A. betularia* had been subjected to forcing, so as to cause it to emerge at the same time as *A. prodromaria*.

Mr. Tutt also exhibited forms of *Caradrina*, some of which he said were considered distinct on the Continent, though they were not recognised as such in this country, viz.: *Caradrina taraxaci (blanda)*, *C. superstes*, Tr., from Sligo, and *C. superstes*, H.-S., considered as synonymous with *superstes*, Tr., but apparently more closely allied to *C. ambigua*.

Mr. Bristowe exhibited varieties of *Arctia menthastri*, some of which had been fed on mulberry and others on walnut; no difference was observed in the variation.

Mr. G. Elisha exhibited larvæ in their cases of *Coleophora vibicigerella* and *C. maritimella*.

Mr. A. G. Butler communicated a paper entitled "Additional notes on the synonymy of the genera of Noctuid Moths."—David Sharp, V.P., *Acting Secretaary*.

No other Reports have reached us up to going to Press.

8 JUL. 91

EXCHANGE.

EXCHANGE.—DESIDERATA.—Land and Fresh Water Mollusca of Britain, in exchange for Land, Fresh Water, and Marine Mollusca of North America. —A. H. GARDNER, P.O. Box 62. Pay Ridge. Ms. United States of America.

DUPLICATES.—Pupæ of Philanthiformis. DESIDERATA.—Ova, larvæ, pupæ: or bred insects for renewing.—H. MURRAY, Lowbank Villas, Carnforth.

DUPLICATES.—H. pomatia, H. cantiana, Buliminus obscurus with variety alba, Clausilia laminata, Cochlicopa lubrica, Cœcilianella, acicula. Desiderata.—H. revelata, H. fusca, Buliminus montanus, Pupilla secale, Clausilia biplicata, Cochlicopa tridens, Stenogyra goodallii, or other land shells (British) not in collection.—E. W. SWANTON, Doddington, Sittingbourne, Kent.

DUPLICATES.—Podalirius, Alexanor, Apollo, Jasius, Cassandra, Cleopatra, and many other French butterflies in very fine condition. DESIDERATA.—Numerous British Geometræ and Noctuæ, or larvæ or pupæ.—T. MADDISON, South Bailey, Durham.

EXCHANGE.—Algerian Coleoptera, and numerous duplicates of shells, in exchange for land and fresh water species of the latter, mostly exotic, not in collection. Wanted principally: Gen. Bulimus, Diplommatina, Alycoes, Clausilia, Pupa, generally Helicidæ.—C. J. ANCEY, Administrateur-adjoint à Boghari, Algeria.

DUPLICATES.—American Lepidoptera and Coleoptera. Desiderata British or Exotic Bombycidæ and Sphingidæ.—Miss EMILY MORTON, Newburg, New York. New Windsor Delivery, U.S.A.

EXCHANGE.—I should be glad to exchange rare vars. of H. nemoralis and hortensis with anyone who has paid special attention to these shells.—Rev. J. W. HORSLEY, Holy Trinity Vicarage, Woolwich.

DUPLICATES.—Boreata, Monacha, and others. Desiderata.—many common species to renew.—A. E. HALL, Norbury, Sheffield.

I have Vol. I of Ent. Weekly Intelligencer in duplicate, it is in good condition and will exchange it for well got Lepidoptera. I would be glad to purchase or otherwise Entomologist Part 100, Vols. 2-5, and Ent. Annual for the years 1866-68 or 70 to end —A. E. HALL, Norbury, Sheffield.

American Lepidoptera. cocoons and chrysalides of same. American Birds' eggs, Indian relics snd fossils for Exotic Lepidoptera other than European. South American, African and Australian especially desired.—L. W. MENGALL, Reading, Pa., U.S.A.

TO CORRESPONDENTS.

Owing to great pressure on our space, very many important communications unavoidably stand over. In the section of Coleoptera, Mr. Lewcock's Gossiping Notes, and paper and notes under the signatures of James Cosmo Melvill, M.A., F.L.S., Rev. W. F. Johnson, H. Heasler, H. Bickerton Jones, W. H. Bennett, W. Chaney, R. W. Thompson, G. A. Lewcock, &c., are left over. A very important paper on the Hymenoptera of Lancashire and Cheshire, by Willoughby Gardner, Esq., of Liverpool, is in hand, and if possible, will be commenced in next number.

Conchological section.—Mr. Cockerill having sailed for Jamaica, this section is temporarily suspended. Communications in the meantime to be sent to the Editor.

Mr. G. A. Lewcock, 73, Oxford Road, Islington, N., Hon. Sec. City of London Ento. and Nat. Hist. Society, represents the Magazine in London, and conducts the section of Coleoptera

Mr. Lewcock desires indulgence from those correspondents to whom he has been unable to write, and hopes to be able to answer all shortly.

New subscribers can have such portions of the Supplements as appeared last year as follows: The British Hawk Moths, 24 pages, 6d; Hand-Book of British Spiders, 32 pages, 3 plates, 1s.; British Pterophori, 24 pages, 6d. Subscriptions, and all communications other than as above, to be sent to JOHN E. ROBSON, Hartlepool.

CHANGE OF ADDRESS.

W. McRae, *from* Weimar *to* Sunny Lawn, West Cliffe, Bournemouth,

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LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY, Free Library, William Brown St., Liverpool. Next Meeting 14th September.

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INSECTA.—COLEOPTERA.

IRISH COLEOPTERA.

BY REV. W. F. JOHNSON.

I am very glad to see by the British Naturalist for this month that their are at least two Coleopterists at work about Dublin. I was a little puzzled by Mr. Brown's paper, as it seemed at first as if his references were for all Ireland instead of the Dublin district. Perhaps I may be allowed to add a few notes on some of the species which he and Mr. Cuthbert mention.

Cicindela campestris has occurred in the neighbourhood of Belfast and I have specimens from thence. It is also said to occur near here (Armagh) but I have not yet met with it.

Both *Elaphrus riparius* and *E. cupreus* are common here, running about on the mud at the edges of lakes and ponds. There is no reason why they should not be found in the Dublin district, as well as *Cychrus rostratus*. *Chlænius nigricornis* occurs at Lowry's Lough, near here, and at Lough Neagh, where *C. vestitus* is also to be found.

Ocypus ater I took in some numbers on the shore at Carlingford; and I fancy the sea shore, or its immediate neighbourhood, would be more likely to produce it than an inland locality.

Geotrupes typhœus does not seem to be common in Ireland. Haliday records it from the Belfast district, and I have a specimen which was found at Newcastle, Co. Down. I have often searched for it, but have not succeeded in meeting with it. It seems to be of maritime tastes.*

I found an immense number of *Serica brunnea* last summer on the sandhills at Bundora, Co. Donegal.† I have also taken it here, and at Portrush, Co. Antrim.

Cetonia aurata has been taken in the neighbourhood of Belfast. There is a specimen in the collection of the Belfast Natural History and Philosophical Society labelled "Whitehouse." I have taken

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*I have found *Geotrupes typhœus* to be more attached to sandy or gravelly districts. The species has been very common in the Esher district during this spring. It also occurs in the gravelly portion of Richmond Park, Surrey.—G.A.L.

†Mr. Robson has also taken numbers of this insect under similar circumstances at Hartlepool.—G.A.L.

Helops striatus on Carlingford Mountain, Co. Lough, and I have a specimen taken by Rev. J. Bristow, near Belfast.

Gonioctena pallida is an addition not only to the Phytophaga of Dublin, but of Ireland, and is an interesting one also. I should be curious to know whether any of the variety mentioned by Canon Fowler as having dark spots on elytra and thorax occurred among those captured by M. Brown.*

Coccinella 22-punctata is common here by sweeping herbage on hedge banks.

C. oblongoguttata and *C. ocellata* I have taken by beating fir trees on a boggy heath at Churchill, in this County.

Mr. Cuthbert's note respecting *Demetrias atricapillus* is interesting, as it appears to be the first record of its occurrence in Ireland. I am glad also to see *Philhydrus nigricans* added to our list. I do not quite agree with Mr. Cuthbert's remark that "insects which in Great Britain are local or sparingly distributed are pretty certain to have no place in the Irish fauna." I have found the opposite in several instances, notably in *Pelophila borealis*, which, though quite common here, does not occur on the mainland of Great Britain but out on the Orkneys. *Bembiduim Clarkii*, *Cœlambus quinquelineatus*, and *Erirhinus æthiops* are all decidedly scarce in Great Britain but plentiful enough here.

Among the Lepidoptera I may mention *Peronea perplexana* which is scare and local in England, but has occured here in great numbers. I hope Mr. Brown and Mr. Cuthbert will energetically work up the coleoptera of their district, for there are many good things to be got there, e.g *Diglossa mersa* used to be taken on the beach at Killarney and *Nebria complanata* near Arklow, hiding among *Asplenium marinum* (Ent. Annual, 1857). *Carabus auratus*† has been recorded from Lough Bray (Fowler Col. British Island, Vol. I.), but doubtfully, and it would be interesting if this doubt could be cleared up.

Winder Terrace, Armagh, June, 1891.

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*The specimens of *Gonioctena pallida* sent me by Messrs. Brown and Cuthbert are of the normal character.—G.A.L.

†Although this beetle is frequently picked up in the London markets, its British origin is very doubtful. The general opinion appears to be that it is imported with the vegetable produce.—G.A.L.

LYCTUS BRUNNEUS, STEPH. IN LONDON.—It it perhaps rather late to record the fact that my brother took a specimen of this rare beetle last July, in Southwark Street, at a provision warehouse.—H. HEASLER, Danby Street, Peckham.

An example of this beetle was also captured by myself at London Wall, during a meeting of the City of London Entomological and Natural History Society, in August or September last year. I had forgotten the circumstance until reminded by Mr. Heasler.—G.A.L.

CETONIA AURATA IN IRELAND.—I find that the Mr. W. F. de V. Kane has taken *Cetonia aurata* in County Cork, County Waterford, and at Sneem in County Kerry; and that I have a specimen taken by the Rev. J. Bristowe near Belfast.—(Rev.) W. F. JOHNSON, Armagh.

In your June number Mr. Brown says he has only seen one specimen of the Rose Beetles in Ireland. While staying at Howth last year I took a specimen of *Cetonia aurata*, and this year a second on June 11th, at Lambay Island, near Howth.—H. BICKERTON JONES, Liverpool, 21st, 1891.

TOXOTUS MERIDIANUS.—Herewith I send a specimen of *Toxotus meridianus* captured on 17th June, at Chattenden.—R. W. THOMPSON, Regent's Park, N.W.

[The specimen for which I am indebted to Mr. Thompson is the black form of this species, and is a very fine insect. I have also captured four additional specimens since the 17th inst., viz.: at Eynsford (Kent), and Watford (Herts).—G.A.L.]

CAPTURES AT ARMAGH.—I had two capital days on June 11th and 12th at Lowry's Lough, and got *Cœlambus 9-lineata*, *Blethisa multipunctata*, and *Philonthus dimidiatus*.—(Rev.) W. F. JOHNSON, Armagh.

CAPTURES AT WEST WICKHAM.—On June 8th and 9th I was successful in obtaining 4 *Rhynchites pubescens*, *R. megacephalus*, *R. nanus*, *R. æquatus* and several *R. æneovirens* at West Wickham.—W. CHANEY.

A NEW LOCALITY FOR BLEDIUS CRASSICOLLIS, LAC.—I have taken *Bledius crassicollis* plentifully here this season, and have consequently been able to supply all my friends.—W. H. BENNETT, Hastings.

[I have to thank Mr. Bennett for a good series of this species, of which Rev. W. W. Fowler says "very local, has only hitherto occurred at Deal."—G.A.L.]

COLEOPTERA AT MITCHAM.—Having done most of my spring collecting at Mitcham this year a few notes as to my success may not be uninteresting. My special object was to increase my *Staphylinidæ*, which I have certainly done, having captured about 50 species there that were new to me. The following are some of the best things I have taken during the last four months. In February: *Cymboidyta marginellus*, *Philhydrus melanocephalus*, *Chilopora longitarsis*, *Tachyusa atra*, *Philonthus signaticornis*, *Trogophlœus pusillus*. In March: *Berosus affinis*, *Dytiscus punctulatus*, *Philonthus signaticornis* and *fulvipes* and *Mycetoporus reyi*. In April: *Cymbiodyta marginellus* and *Stenus guttula* commonly; also *Tachyusa atra*, *Stenus incrassatus*, *Berosus signaticollis*, *&c*. In May: *Pterostichus gracilis*, *Stenolophus teutonus*, *Acupalpus gyllenhali*, *A. consputus*, *Dyschirius globosus*, *Calodera riparia*, *Tachyusa atra*, *Myrmedonia limbata* (from ants' nests commonly), *Bledius fracticornis*, *Scopæus minutus*, *Deinopsis erosa*, *Orobitis cyaneus*. The number of common insects which occur at Mitcham are very numerous, and altogether I have taken about 200 to 250 species.—H. HEASLER, Peckham.

CAPTURES DURING JUNE.—June 6th.—I visited Loughton for purpose of beating the hawthorne. The blossom was hardly so forward as I expected, and in several places not yet opened. *Adimonia sanguinea* and *Anthonomus pedicularius* were fairly common. *Rhynchites æquatus* abounded, *R. pauxillus* scarce, *R. æneovirens* (three only, and these were on oak). Mr. Cripps took one *Asclera cærulea*. July 13th.—Superintended a cricket match at Notting Hill, but during intervals of leisure explored the railway fences, getting an odd specimen of *Callidium violaceum* and several *Ernobius mollis*. June 20th—Accompanied Mr. J. T. Carrington's party (South London Entom. Soc.) to Eynsford, Kent. The weather was everything that could be desired, and Coleoptera abundant. I found *Polydrosus undatus* fairly common on birch and oak, by beating. Swept several *Bruchus atomarius* from veitch; *Œdemera lurida* occurred commonly on the chalky slopes; likewise took *Mordellistena pumilla* and many other common things. By beating hawthorne and hazel, I obtained a plentiful supply of *Cistela murina* and some half-dozen *C. luperus*. Mr. R. South brought me a specimen of *Dascillus cervinus*, and I beat out five others during the afternoon. Another member kindly captured *Cryptocephalus aureolus* and handed to me, and soon afterwards I swept a second specimen. I was agreeably surprised to find two *C. lineola* in the umbrella, also one *Drilus flavescens* (male), these were all from hawthorne, as were four fine *Otiorhynchus tenebricosus*. *Telephoridæ* were out in full force, but nearly all common species, indeed beyond taking a couple of dozen of *Telephorus fuscicornis* I found nothing out of the way. Several *Malachius viridis* turned up, but this insect is generally common in Kent, Surrey, and Essex.—G. A. LEWCOCK.

DIPTERA.

MICRODON MUTABILIS, *L.*—The record of the capture of this very curious dipterous fly, which at first sight, when at rest, may be mistaken for a bee or sawfly, will prove no doubt interesting to those students who are working at that group ; the first capture was made by my friend F. C. Lemann, on the 16th June, after being identified by Mr. Coryndon Matthews, finding that Mr. Verrall had placed it in his list in *Italics*, as much as to say it was a doubtful British species, gave me a greater desire to capture others, consequently my friend Lemann and I journeyed to the locality at Ivybridge on the 21st, and were rewarded with three additional specimens, two of them falling to my net, it was a glorious, sunny day, we observed that they took very short flights a few inches above the ground and again settled on the grass, the three captures taking just as many hours, therefore they may be called scarce, and the locality local, not covering more than twenty square yards.

The national collection I believe did not possess a British specimen until I presented one of the above mentioned captures.

By SCHINER'S *Fauna Diptera Austriaca* the life history appears to have been worked out for it says "The metamorphosis of the different species is known ; the larva resemble small slugs, and would at first be taken for such ; they are flat and fleshy on the underside, the back is arched and appears moistened ; they have been found in the nests of *Formica fusca*, and under the bark of a willow species. The imagine are found in wet places where they sit on the undersides of leaves, and in the grass, and may often be taken in great numbers by sweeping. They make a humming noise during flight and have little resemblance to the genera of *Syrphidæ*."

The noise produced during flight can also be produced when not in motion; on removing the lid of the box on the following morning to make a closer inspection of the first capture, I was rather surprised to find it was able to make a humming noise when annoyed, a beautiful undulating sound, it was some time before I could discover how it was produced, seeing the fly apparently did not move, at last with a powerful lens I discovered that it was by its poisers vibrating, and I believe coming in contact with some short bristly hairs situated on the abdomen and pointing towards the thorax; the undulations were caused by the rapidity with which the poisers were moved.

G. C. BIGNELL, *Stonehouse, Plymouth, 1st July, 1891.*

HYPODERMA BOVIS, *Deg.*—This species which was identified by Mr. C. Matthews was captured on the 9th June, on the moor between Yelverton and Clearbrook, the hairy body in three colours, white, black, and red, giving it a very bee-like appearance. This is a subcutaneous parasite on cattle, and very seldom taken in the imago state.—ID.

LIST OF THE LEPIDOPTERA OF ABERDEENSHIRE AND KINCARDINESHIRE.

BY WM. REID, PITCAPLE.

Larentia Pectinitaria.—So common that it is generally a nuisance.

Emmelesia Affinitata.—Rare. Inverurie and Peterhead.

Emmelesia Alchemillata.—Widely distributed, and not rare, common about Pitcaple.

Emmelesia Albutata.—Rather local, but swarms in many places, and that is wherever the Yellow Rattle is to be found.

Emmelesia Ericetata.—Local, sometimes common near Muchalls, Braemar, Scotson moor, Inverurie, and Monymusk, &c., flies in the afternoon sunshine.

Eupithecia Venosata.—Very local, among bladder campion, near Inverurie and Pitcaple.

Eupithecia Linariata.—Has been taken by Mr. Tait near Inverurie.

Eupithecia Pulchellata.—Local, Aberdeen, Muchalls, Dyce, Banchory, Inverurie, Pitcaple, &c.

Eupithecia Subfulvata.—Locally common, near Pitcaple, Denmore, Inverurie, and other places, the rusty colour of superior wings is restricted to the merest patch in our specimens.

Eupithecia Plumbeolata.—Old Aberdeen and Tyvie, scarce (Prof. Trail's " Lep. of Dee.").

Eupithecia Pymæata.—On rough ground almost everywhere, flying in the sunshine, and sitting upon flowers, but never very common.

Eupithecia Helveticata.—Braemar (Prof. Trail).

Eupithecia Satyrata.—Local, but not rare.

Eupithecia Satyrata var. Callunaria.—More common than the type upon the moors.

Eupithecia Castigata.—Rather scarce, near Aberdeen, Braemar, Inverurie and Pitcaple.

Eupithecia Albipunctata.—Rare, I have taken it several times near Pitcaple.

Eupithecia Lariciata.—Locally common.

Eupithecia Indigata.—Local, common in fir woods.

Eupithecia Nanata.—Common on all moors.

Eupithecia Vulgata.—Local, but common in many places.

Eupithecia Expallidata.—I have taken several lately at Ragwort flowers.

Eupithecia Absynthiata.—Generally rather scarce, but not rare about Pitcaple, have captured as many as a dozen in one evening.

Eupithecia Minutata.—Scarce, on all moors near Inverurie, Pitcaple and elsewhere.

Eupithecia Assimilata.—Have bred it several times from larvæ found on currents in my own garden.

Eupithecia Tenuiata.—Larvæ abundant in sallow catkins, imagines also common at night flying about sallows.

Eupithecia Sobrinata.—Abundant wherever juniper is found, larvæ and imagines exceedingly variable.

Eupithecia Togata.—Mr. Tait has found traces of the larvæ near Inverurie. I have also seen spruce cones showing unmistakable traces of the larvæ, but as yet have neither seen larvæ nor imagines.

Eupithecia Pumilata.—Swarms on the moors.

Eupithecia Rectangulata.—Mr. Tait has a specimen in his collection, which he captured near Inverurie.

Eupithecia Debiliata.—Exceedingly local, I have found the larvæ among *Vaccinium myrtillus* on Ben-na-chie (Benachie).

Lobophora Hexapterata.—Once at Fyvie (" Lep. of Dee.").

Lobophora Lobulata.—Scare, Braemar (Dr. White), Inverurie (Mr. Tait), Pitcaple (Mr. Reid).

Thera Juniperata.—Locally common, among juniper.

Thera Simulata.—Common at Braemar, and Mr. Tait has taken it at Inverurie.

(To be continued.)

Vertebrata.

"WHAT IS A BIRD?"

BY LINNÆUS GREENING.

(Continued from page 126.)

Returning again to the consideration of the embyology of the Sauropsidans, we find that it strongly supports the assertion that all birds and all reptiles are but modifications of one remote ancestor; and in tracing the life of a chick in the egg we shall see some of the evidence in support of this, and shall perhaps be prepared to accept, with the majority of modern naturalists, the doctrine that the life history of the individual is an epitome of the history of the species. All birds are strictly oviparous, and all birds eggs normally possess a hard shelly covering, though if the birds cannot get enough lime they will deposit their eggs with a soft covering, as do most reptiles. In all Sauropsidans the fertilization of the egg is effected before it leaves the body of the mother. After fertilization, segmentation of the germinal disc begins; and, in birds, the fertilized egg, in passing down the oviduct, becomes surrounded with the white, the shell membrane, and the shell, all of which are secreted by appropriate glands, so that normally, when a birds egg leaves the body of the mother the embryo is surrounded by several protective coverings. The development of the embryo may be arrested if a sufficiently high temperature is not maintained after the egg is laid, and in most birds this arrest of development is normal, the bird not begining to sit as soon as she has laid one egg; but when the clutch is complete and sitting commences, the heat set up recommences the development which had been arrested.

The earliest stages of development of all vertebrates are similar and need not detain us, though in passing, we may point out that in Sauropsidans; the proportion of nutritive to formitive yolk is high, and in some birds extremely so. When we remember that all young reptiles and many young birds can, as soon as hatched, feed themselves, this will scarcely surprise us. The point to be strongly insisted on is that a careful study of the development of young reptiles and young birds reveals a closer relationship between them than between any other groups of animals. The membranes which invest the embryonic bird, as well as its skeleton and blood corpuscles, are most reptilian in character and it is only at a comparatively late stage of embryonic life that indications of the marked differences between adult birds and reptiles appear. Towards the latter part of the hatching period, when the liver has been developed, this organ takes up the nutritive yolk and converts it partly into bile and partly into blood corpuscles. The large proportion of albumen in a bird's egg is no doubt connected with the development of feathers which are mainly built up from it; just as a feather is the product of several causes acting cumulatively during long periods of time, so the high proportion of albumen in the birds' egg is a correlated result of the same cumulative causes.

As in examining the fossiliferous rocks we find that lower forms have preceded higher ones, so in embryology we find indications of the same progress; if in an embryo we found traces of the characters of a higher group the doctrine of descent would scarcely be tenable; if for instance a fish embryo possessed characteristics of a reptile, or if a newt larva presented some mammalian features, it would be difficult if not impossible to reconcile such occurrences with the theory of descent, but as a matter of fact such things never happen; at various stages of its growth, the embryo presents certain features of resemblance to lower forms, which we may regard as indications of the ancestral stages through which the species has passed. These general remarks are not entirely devoid of connection with the subject of this paper since all birds pass through one moult and some through two before leaving the shell. Perhaps the word moult may mislead since the first feathers are not cast but absorbed. These first feathers are simple, barbless and of no use to the chick, and may not inprobably be regarded as persistant representatives of the first feather-like covering of their far off ancestors which has been referred to in the earlier part of this paper. Some birds go through two moults within the shell leaving it ready for flight, as do for instance, the megapodes. The most highly specialized of arian types are some of the flying birds, and in them the young are hatched in a comparatively helpless condition, depending for food upon their parents. In birds as in other groups of animals the law holds good, "the more highly specialized the adult, the more helpless the young."

In the less highly organized birds the young are hatched in a less defenceless condition, and in some we find this reversion to the reptilian habit (for in all reptiles the young can take care of themselves as soon as hatched) is very marked, as for instance the ostriches and cassowaries, and more familiarly the lapwing and its allies, which though no doubt more highly organized than the ostrich do not feed their young but take them to their food.

It may be noted also that those birds whose young when hatched can fend for themselves, lay eggs relatively very large; this is of course due to the need of providing nutriment for the chick till it has attained a somewhat advanced state of development.

If there is one branch of natural history which more than another demonstrates the transmissability of both hereditary and acquired characters it is oology, using the word not in its old narrow sense with reference to the shape and colour of the shell, but in a higher and broader sense as including not merely the hard outer covering but the living organism within. An egg hatched artifically will give rise to a bird; that bird though it has never seen either its parents or other birds of its own species will feed true to its specific habits, *i.e.*, if it belong to a granivorous species it will take nought but grain, if to a carnivorous species nothing but flesh. More than this, if male and female birds artificially hatched and which have never seen birds of their own species, be paired, they will breed and build nests true to the specific type. Why is this? there is only one answer, *i.e.* hereditry. In other words the experiences of countless generations have influenced the small speck of matter, seemingly so simple, yet really so complex, which is called the germinal disc, and whose potentialities are so marvellous and well nigh incredible, that they surpass the dreams of the wildest speculator, and reveal to him who has eyes to see something of the mystery of life, and at the same time shew him some of the steps by which the many beauteous and varied forms we see around us have arisen from the most simple ancestral type. Think for for a moment what all this means, a minute speck of matter called spermatozoon is transmitted from the body of the male bird to that of the female, where it comes into contact with another minute speck of matter called a germ or ovum, and the mysterious process which we label fertilization has been effected. Before the ovum is expelled, certain glands, as previously stated, secrete protective coverings and then what we call an egg is laid. Both parents may die, the egg may be sent to the other side of the world; yet it contains something which because we do not understand it, we label dormant vitality. We apply artificial heat and from the egg emerges a bird true to its species; if instead of one we have a number of eggs we shall have male and female birds which will breed true, though of course there will be those slight variations which always accompany the development of living organisms. What I wish to make clear is that not merely bodily peculiarities but mental activities are transmitted through the eggs, and it passes our comprehension how male characteristics can be transmitted in that microscopical speck the spermatazoon, even more than that female characteristics are transmitted through the ovum. Although the egg may be transferred to the other side of the world, yet in its development there will be unfolded not only the form but the mental activities and habits of the parents, and we realize that in that small mass of protoplasm, there lay not merely the protentiality of reproducing the parental type but of surpassing it, as that in its turn had surpassed its predecessors.

(To be concluded.)

Notes on Short-eared Owl Breeding in Essex.—This Owl is most numerous with us during the autumn migration, when a good many are killed by the shore gunners; but a few stay with us the whole year and breed in some of the small islands in the

Handford Waters, near Harwich, where no doubt they destroy many young Redshanks, and young Wild Ducks, which breed in some numbers on the island.

On the 4th August, 1884, whilst shooting on the benthings which surround the islands, I saw three of these birds, two of which were shot, one of them was hunting for some young Redshanks, whilst the two parent birds were flying around shrieking, and trying to entice the Owl from the spot; this was in the bright sunshine, which did not seem to make any difference to the Owl's power of seeing; it was quartering its ground beautifully so as not to miss a yard, no doubt at the old Redshanks cry of warning the young ones had crept under the grass. Again on the 31st July, 1889, I saw an Owl of this species hawking over the benthings in the sun, and calling; on making inquiries of some labourers who worked on the the island I ascertained that the Owls had bred there in the rough grass, and that they had caught some of the young owls before they could fly. On Whit-Monday last, the 18th May, whilst searching on the benthing for the nests of the Blackheaded Gull, *(Larus ridibundus)* I came across another Owl of this species, it had just killed a Blackheaded Gull, and was making its breakfast off the unfortunate bird; it was very fearless, flying only a few yards at a time; I have no doubt but that its mate was nesting somewhere in the neighbourhood. I think this is the most southward locality recorded for the breeding of this species.

F. Kerry, Harwich.

Reports of Societies.

ENTOMOLOGICAL SOCIETY OF LONDON.

July, 1, 1891.—Mr. Frederick Du Cane Godman, M.A., F.R.S., President, in the chair.

The Rev. John Isabell, of St. Sennen Rectory, Penzance, was elected a Fellow of the Society.

Mr. Jacoby exhibited a specimen of a species of Coleoptera belonging to the family *Galerucidæ*, with the maxillary palpi extraordinarily developed.

Canon Fowler, on behalf of Mr. Wroughton, Conservator of Forests, Poona, exhibited specimens of a bug imitating an ant, *Polyrachis spiniger*, and of a spider imitating a species of *Mutilla*, and read the following notes:—" I have taken a good many specimens of a bug which has achieved a very fair imitation of *Polyrachis* *spiniger* (under the same stone with which it may be found), even to the extent of evolving a pedicle and spines in what, were it an ant, would be its metanotum. Curiously enough, however, these spines are apparently not alike in any two specimens. Is it that this bug is still waiting for one of its race to accidentally sport spines more like those of *P. spiniger*, and thus to set the ball of evolutioe rolling afresh? or is it that the present rough copy of *spiniger's* spines is found sufficient to deceive? The bug has also been found in the Nilgherries. Mr. Rothney remarks on the above species:—'I have not found the species mimicking *Mutilla*; but in Calcutta and Barrackpore. where *P. spiniger* is a tree ant, forming its net by spinning together the twigs of a shrub, the mimicking bug also assumes arboreal habits, and may be found on the trunks of trees with the ants.'"

Mr. Porritt exhibited living specimens of *Eupithecia extensaria* and *Geometra smaragdaria*, the position assumed by the former proved conclusively that it had rightly been placed in the genus *Eupithecia.*

Mr. Crowley exhibited two specimens of a *Papilio* from the Khasia hills, belonging to an undescribed species allied to *P. papone*, sub-generic section *Chilades.* Col. Swinhoe remarked that he possessed a specimen from Northern Burmah, Mr. Moore and others took part in the discussion which followed.

Mr. Dallas Beeching exhibited a specimen of *Plusia moneta*, recently taken by himself at High Woods, Tonbridge, and specimsns of *Gonepteryx cleopatra*, lent him for exhibition, which were alleged to have come from the same locality.

Dr. T. A. Chapman exhibited the larva of *Micropteryz calthella*, and read the following notes:—The larvæ were obtained by placing moths in a cage with damp moss, dead leaves, and other *débris* off the surface of the ground. Into this the moths crept to a depth of half-an-inch, forcing their way into narrow cavities, and laid their eggs in groups of six or twelve. The eggs are clothed with fine hairs, tipped with refractive particles. The larva, about a millimetre in length, possesses on each segment eight processes of a globular form raised on a very slight pedicle. Besides the thoracic legs, each of the abdominal segments (eight) possesses a pair of minute jointed legs of the same type as the thoracic. There are also a pair of long jointed legs of the same type as the thoracic. There are also a pair of long jointed antennæ."

Col. Swinhoe read a paper "On new species of Heterocera from the Khasia Hills."

Mr. Cowley read a paper "On a new species of *Prothoe.*"

Mr. C. J. Gahan read a paper "On the South American species of *Diabrotica*," Part II., being a continuation of Dr. Baly's paper on the same genus published in the Society's Transactions for 1890, Part I.

Mr. W. F. Kirby communicated a paper entitled "Notes on *Siphonophora artocarpi*," referring to an appendage of the eyes which had been overlooked in his previous description.—H. Goss & W. W. FOWLER, *Hon. Secretaries.*

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

Thursday, 18th June, 1891.—Exhibits:—Mr. Huckett, a box of insects from Epping, the most noticable being *Platypteryx hamula, P. lacertula, Nola cristulalis,* *Corycia temerata, Tephrosia consonaria*, a dark variety of *Cidaria russata*, and *Hypena rostralis*, all taken on May 23rd and June 6th. Mr. Simes, living larva of *Saturnia carpini* and *Catocala nupta*. Mr. Quail, series of *Emmelesia albulata, Eupithecia lariciata* and *Heliodes arbuti*. Mr. Milton, 27 species of Lepidoptera bred this year, among which might be mentioned *Papilio machaon, Saturnia carpini, Smerinthus tiliæ, Deilephila euphorbiæ (foreign), Abrostola triplasia, Cucullia verbasci, Amphidasys betularia, Eurymene dolabraria, Iodis lactearia*, &c. Mr. Smith exhibited, *Smerinthus tiliæ* bred this year, also *Platypteryx hamula, P. falcula, P. lacertula* and *Anaitis plagiata* from Wickham, and *Platypteryx unguicula, Cilix spinula*, and *Ephyra trilinearia* from Chingford. In Coleoptera, Mr. Burrows exhibited a nice specimen of *Thalycra sericea*, one of the rare club-horn beetles. Mr. Tutt remarked on the abundance of Lepidoptera at Chattenden, he having taken as many as 180 insects there in a few hours. Dr. Buckell, who exhibited the genus *Lobophora*, gave an interesting account of the species exhibited. He said that all the species of the genus were characterised by the development of a lobe at the base of each hind wing. In *sexalisata* and *hexapterata* this presents the appearance of an additional wing. *Hexapterata* occurs in two forms, one with transverse lines more or less over the whole disc of the wing, the other with a pale zone occupying the whole of the centre of the wing.

Thursday, 2nd July, 1891.—Exhibits:—Mr. Tutt, a very dark, almost black, specimen of *Boarmia roboraria*. Mr. Battley, living larvæ of *Scotosia certata*; he remarked that he had taken this species in several localities in North London, and had also found the larvæ. The latter are usually spun up between two leaves in the top shoots of the Holly-leaved Barberry (*Mahonia aquifolia*) which grows freely in the London parks and gardens. Dr. Buckell exhibited the ova of *Acronycta rumicis* under the microscope. He also exhibited ova of *Amphidasys betularia*; these were very small, in that respect resembling *A. prodromaia*; they are ovoid in shape, one end smaller than the other, ribbed longitudinally, and of a geenish-grey colour. Like the ova of *Biston hirtaria*, they are deposited in crevices, but have not much cohesion. Mr. Quail exhibited bred specimens of *Callimorpha dominula* and *Chelonia villica*. Mr. Smith, *Platypteryx lacertula, Ephyra punctulata, Cidaria corylata*, and a fine variety of *Rumia cratægata*, taken at light at Rectory Road, the outer half of the left fore-wing being suffused with reddish brown, the wing rays remaining yellow.* Mr. Hill, a very fine variety of *Argynnis euphrosyne*, taken by a lad in Epping Forest some years ago. The upper surface was much suffused witth black, while the silver spots on the underside were changed into streaks. He also exhibited a dark specimen *Dicranura vinula*, and a bred specimen of *Cabera pusaria* with the lines on the left fore-wing coalescing. Mr. Bayne exhibited *Platypteryx hamula* and *P. unguicula* from Epping Forest, a specimen of *Notodonta dodonæa*, and some vars. of *Lycæna alexis* from Aylesbury, also some asymmetrical varieties of *Tæniocampa stabilis*. Coleoptera, Mr. Heasler exhibited a series of the "Death-watch beetle," *Xestobium tessellatum*. He stated that although this species was fairly common in the bark of oak trees, specimens were difficult to obtain, owing to the hardness of the wood, but at a certain time of the year they were to be found crawling on the outside of the bark, probably for the purpose of oviposition. He had endeavoured to induce them to make the well-known "ticking" noise, but they only produced a faint sound, and he suggested that the louder noise was caused by the acoustic property of their burrow. He also exhibited a series of *Telephorus translucidus*, which he remarked was formerly thought a rare species, but it had been taken a few years ago at Epping, then at Highgate, and now he had found it at Peckham. Mr. Quail read a portion of a letter that he had received from Mr. Culpin, who had gone out to Brisbane. The subject brought forward was the position of *Lycæna bœtica*. He stated that three species occurred in his neighbourhood, viz. : *Bœtica*, and two closely allied allied species, and expressed his opinion that they should not be included in the genus *Lycæna*, but form a separate genus, between *Lycæna* and *Thecla*. Mr. Tutt, in commenting on this letter, said that some of the continental forms of the *Lycænidæ* had the two sexes resembling respectively the genera *Polyommatus* and *Lycæna*, thus proving the close connection existing between them.*

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*There is no doubt whatever the reddish hue has been produced by the flame of the lamp. Anyone may make such varieties by passing a specimen through a flame, which will brown the wing scales leaving those on the nervures yellow.—ED., B.N.

Thursday, July 16th, 1891.—Exhibits—Mr. Clark, a series of *Heliodes arbuti* from Epping Forest, varieties of *Arctia lubricipeda* (bred) and *A. menthastri* (from Hackney) both showing a large development of the black markings ; also a larva of *Hepialus virescens* (from New Zealand) with a fungoid growth of *Torrubia robertsii* protruding from the back of its head. He remarked that there was a description of this in the July number of the Entomologist's Record (p. 98). Mr Battley exhibited a bred series of *Artia villica*, he pointed out that the pale specimens had the markings on the fore wings approaching those of *A. caja*, the four cream coloured spots nearest the tip of of the wing coalescing to form the X like mark much resembling that species. He also exhibited light and dark forms of *Callimorpha dominula*, from Deal. Mr Gates, *Procris statices*, *Sciaphila sinuana*, *Psyche reticella* (from Southend), *Dasycera sulphurella*. *Endrosis fenestrella*, *&c.*, also living larvæ of *Dicranura vinula*.

Dr Buckell exhibited the ova of *Acronycta megacephala*, under the miscroscope. These were deposited singly, and not in groups as with *A. rumicis*. They showed the usual shape and contour of the genus, and were pale green, with dark red spots. He also exhibited a specimen of *Melanippe fluctuata* from Highgate, with a pale space in the centre of the dark costal blotch, thereby revealing the discoidal spot ; and a series of *Ephyra trilinearia* from Epping Forest. These latter varied considerably in (1) the basal line, which was well marked in some, but scarcely to be traced in others ; (2) central line, usually narrower in the females, but in one specimen (female) it was exaggerated into a band ; (3) discoidal spot, on (a) upper wings, not to be traced in one specimen, well marked in others, and outlined with black in one ; (b) hind wings, to be traced in all, and often well marked. The position of this spot varied from being imbedded in the median line, to half-way between median and basal lines. Mr Bayne exhibited *Sesia tipuliformis* and *Scotosia certata* from Tottingham; *Demas coryli*, *Tephrosia consonaria*, *Emmelesia affinitata* and *Ephyra porata* from Epping; and *Procris geryon* from Aylesbury.

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* The division suggested was made by Hubner, those with short tails being placed in the sub-genus *Lampides*, those without orange or fulvous spots on the underside in the sub-genus *Nomiades*, and those with such spots in the sub-genus *Agriades*. The first includes *Bœtica* and *Argiodes ;* the second *Argiolus*, *Acis*, *Alsus* and *Arion* ; the third, *Corydon*, *Adonis*, *Icarus*, *Agestis*, and *Ægon*. It is to be hoped no one will suggest new sub-divisions. See Dale's British Butterflies.—Ed. B.N.

Coleoptera.—Mr Heasler, various species from Ellham and Bexley, including *Notiophilus* 4—*pustulatus*, *Mordellistena abdominalis*, *M. pumila*, *Corymbites bipustulatus*, and *Hedobia imperialis.* Mr Clark, series of *Carabus nitens.* Mr Pearson, *Blaps similis.* Dr Buckell remarked that many species, notably *Platypteryx falcula* and *P. lacertula*, were still on the wing in good condition. From notes given him by Mr. Bayne, he found that they had first been taken at Epping on 31st May, and had continued without any intermission up to 12th July. He suggested that the cold spring had caused these insects to come out a few at a time, instead of all appearing towards the end of May as usual.

Mr Battley reported that he had found *Hesperia lineola* common on July 14th, between Benfleet and Leigh. He thought that it was somewhat more sluggish than *H. linea*, and it was very easy to detect the difference of these two species when at rest. He also stated that *Apamea ophiogramma* were now on the wing, he having taken or bred several during the last week.—G. A. Lewcock and A. M. Battley, *Hon. Secs.*

GUERNSEY SOCIETY OF NATURAL HISTORY.

The usual monthly meeting was held in the Society's room at the Guille-Allès Library. Mr. John Whitehead presided and there was a good attendance of members.

Mr E. D. Marquand read a paper on the "Wings of Insects," illustrating his subject by numerous drawings on the blackboard.

Mr A. Collinette followed with another on "The Evolution of Insects Wings," which he illustrated by several specially prepared diagrams, and a genealogical tree showing the relation and inter-connection of the various orders. An interesting discussion followed.

Mr W. A. Luff exhibited specimens of *Sesia philanthiformis*, taken on Midsummer day, also a fine variety of *S. janira* with the hind wings of a beautiful pearly grey colour. The Secretary read a note from the Rev. J. Lowe, announcing the capture of a specimen of *Ellopia fasciaria*, this being the first record of its occurrence in the island.

NOTES FOR BEGINNERS.—MICRO LARVÆ FOR THE MONTH.

BY OEO. ELISHA, F.E.S.

August has arrived, and we find larvæ that feed up and appear in the imago state the same season, are gradually getting scarcer, for most of them by this time, have disappeared to pupate in some suitable place, and we now find the larva of many others that do not appear in the imago state till the following spring or summer.

The main difficulty one has to contend with in rearing these autumnal larvæ, is to keep the debris among which they have spun up from getting too dry, or if the cages are not well ventilated, from getting mouldy, which it is pretty sure to do unless the air can pass freely through the sides, and I have found, by long experience, the plan that succeeds best, is to put all the cages out in the open air on the earth, under which a thick layer of broken flower pots or coarse cinders has been put, so as to ensure free drainage. The larvæ put into flower pots must have a covering of glass, a little raised above the top of the pot as a protection from excessive rain during their long spell of quietude, the porous nature of the flower pot absorbing enough moisture to keep them sufficiently damp, but many others, the *Coleophora* especially, require no such protection, but do far better if put into cages having free ventilation all round, top as well, and left to the full force of all kinds of weather during the wiuter, protecting them in any way only adds to the risk of losing them.

And now as most of the larvæ we have taken during the earlier months of the year have emerged by this time, we must prepare our cages for the great number we shall be able to obtain during the next few months, and as to the shape of these cages, there is really no rule to go by, anything will do, so long as ventilation and free drainage can be secured, but the main fact one has constantly to remember, for it is most important, is to imitate nature in all these matters, that is, as we find the larvæ in the natural state, so we must try to imitate it as near as possible when we put them in the cages, with the food plant fresh and in its natural position, giving plenty of fresh air, and the chances are we shall be fairly well pleased with the result.

The weather during this month being all in our favour, gives plenty of opportunities of going further away from home to search for some of the species we now ought to obtain, and to that end will again take one of our pleasant rambles along some quiet country lane, for all of them at this time of year have plenty of attractions for us. We are not long before the crumpled up leaves of the Wayfaring tree *(Viburnum lantana)* arrests our attention, on opening one of them we find the larva of *P. tristana* busily at work eating away the leaf, and in the drawn together leaves of sallow the larva of *P. lecheana*. The leaves of the Buckthorn *(Rhamnus frangula)* must also be examined towards the end of the month, when some of the leaves will be found neatly folded over the whole extent of the leaf, this is the work of *Phox. derasana*. These larva are very difficult to rear, owing to their remaining in the larva state all through the winter to the end of April, most of them dying in the meantime. The larva of *C. pomonana* may be found in apples and pears towards the end of the month, and I have repeatedly bred it from larva feeding on the fruit of the white beam tree *(Sorbus aria)* which is all drawn and webbed together, the larva eating away the fruit externally. We will now examine the leaves of that short stunted Oak growing in the hedge, for it is on those sort of Oaks, the larva of *Gel. triparella* is to be found. We soon perceive some of the leaves are fastened together flatly, and on pulling these leaves apart we find a pale green larva, with brown head, and know it is the larva we are in search of. This is a local species and much wanted in collections. On the adjoining Maple bushes towards the end of the month some of the leaves will be found folded nearly half over and fastened with silk, on opening which a a pale green larva, with dark spots and yellow head will be found, eating away the surface of the leaf, this would be the larva of *Gel. scriptella*. It often quits its old habitation, which is partly filled with frass, crawling on to another leaf and folding it over in a similar manner, so that many of these folded leaves will be found untenanted.

While we have been examining these folded leaves, we have altogether forgotton the rank herbage under our feet, and that common plant the *Chœrophyllum temulum* with its umbels of white flowers, growing so freely on the hedge bank, reminds us that the larvæ of *D. Cherophylli* may still be found although it is getting late for them, these are pretty delicate looking larvæ, yellowish green, with dorsal and sub-dorsal lines formed by a series of dark markings, and head green; they are to be found in a light gossamer like web, drawn across the stems of the umbels of the plant, just under the flowers or seeds, often forming a slight gallery into which they retreat, or more generally dropping to the ground on the slighest alarm. Another plant the fleabane *(Inula dysenterica)* growing in that damp place next causes us to stop, for we notice some of the flowers discoloured and some parts of the florets raised above the others; on opening these flower heads we shall probably find the yellowish larva with brown head of *Gel. inopella (paupella)* growing about the hedge in wild confusion. The small bindweed *(Convolvulus arvensis)*, must be examined towards the end of the month for the larva of *B. somnulentella*, they mine the leaves, giving them quite a bleached appearance, the larva being in profusion one year, then suddenly disappearing and not being seen again for several years afterwards, when it suddenly reappears just as abundantly. It is now five years since I last took this larva in a lane in Kent, I was late for it, as the mined tenantless leaves abundantly proved, but with close searching managed to secure two or three dozen larva, and every season since that time have made a journey expressly for it but have not up to the present time met with one solitary larva with all my careful searching.

If we visit a locality were the wild hop is growing freely, about the middle of the month, and examine the leaves, we shall probably find some of them have whitish streaks up the mid rib and sides of the leaves, if on opening this streak we find a reddish larva it would be that of *Cos. eximia (drurella).* Of all the larva I have ever reared these without exception are the most restless. When they quit the leaf to pupate they will squeeze through the finest gauze, often perishing in the attempt, which is the reason so few are bred. Strong unbleached calico tied down tightly over the flower pot is the only thing to keep them in, and then they squeeze themselves between the calico and the edge of the pot and dry up. I circumvented them at last by tying all the mined leaves up in a strong calico bag and hanging it in a shady place, out in all weathers during the winter and to the end of June, then cutting the bag open, laid it in a large propagating pan and was rewarded by breeding a fair number during the following July. The wild apple trees should now be examined for the larva of *O. guttella*, which turn down the side of the leaves, and the leaves of the nut are turned down in a similar manner by the larva of *O. avellanella* towards the end of the month.

On chalky soils, along the edges of cornfield, or railway embankments, the bladder campion (*Silene inflata*) will be found growing, and must be examined at this time for the white cases of the larva of *Col. inflatella*, which will be found sticking straight out from the pod, on the unripe seeds on which the larva are feeding, a fair number ought to be taken for they are far from easy to breed, most of them dying during the winter. On the pods of furze the rough cases of *C. albicostella* may be found if well looked for. This also is the time to search for the short bulky looking cases of *Col. Wilkinsonella* on Birch trees, these cases I have never found commonly, although in many different localities. The Alders should now be examined, when some of the leaves will appear as if partly eaten through, if on turning the leaf over we find a small yellowish green larva under a few threads of silk it would be the larva of *Bucc. cidarella*. In captivity these larva spin their brown ribbed cocoons on the twigs of the food plant. In looking for these larva we shall probably observe some of the leaves, more partically the young terminal ones, have a faint brown line running along the side, crossing to the midrib, and giving the leaf a slight distorted appearance this is caused by the larva of *T. resplendella*, they afterwards form a blotch from mining a larger portion, out of which they cut an oval case, fall to the ground and change to pupa.

If the the leaves of the Hawthorn he now examined, some small brown patches will be observed on many of them and gradually getting larger, these are the mines of *Cemiostoma scitella* and the leaves of the everlasting pea *(Lathyrus sylvestris)* will be found blotched by the larva of *Cem. lathyrifoliella*. The dogwood *(cornus sanguinia)* have leaves at this time mined by the larva of *A. Treitschkiella*, from which they cut out an oval case and drop to the ground, the imago appearing the following June. The above are a few of the species that may be take this month among many others so that it will be seen there is still plenty to do.

Shepherdess Walk, City Road, N.

Notes.

FOREIGN PARCELS BY SAMPLE POST.—In the proceedings of the Entomological Society for May, the Secretary stated that Lord Walsingham had received a letter from Sir Arthur Blackwood, announcing that small parcels containing scientific specimens would not in future be stopped by the English Post Office, when sent abroad at sample post rates. I have, for several years past, sent parcels of Lepidoptera to the United States by sample post, and they have never been stopped. Some years ago a post-master here was good enough to mark outside "Examined at Hartlepool Post Office, and contains nothing of the nature of a letter," adding the official stamp. These parcels were, of course, made up in his presence, and I expect would not be opened again. A new post-master expressed his doubt whether the parcel I desired to send was allowed, but it reached its destination safely.—John E. Robson, Hartlepool.

The Fauna of Glanvilles Wootton.—The number of species which have been found in the parish of Glanvilles Wootton, consisting of 1667 acres, during a period of 90 years, are as follows. As the 6th of February was the centenary of my father's birth, this list, made up to the 6th February, 1891, may be interesting :—

Mammalia	27	species.
Aves	100	,,
Reptilia	8	,,
Pisces	12	,,
Insecta	4150	,,
Ametabola	42	,,
Arachnida	182	,,
Myriopoda	20	,,
Crustacea	10	,,
Mollusca	40	,,
Vermes, &c.	12	,,
	4603	,,
Flora	420	,,
Mussi, Fungi, &c.	267	,,
	5290	species.

I published a History of Glanvilles Wootton in 1878. The list of species then amounted to 4997. The total number occurring in the British Isles I calculate to be 24,635, and of Insects only about 14,000.—C. W. Dale.

Nomenclature.—I am pleased to see that you have touched upon the existing confusion in Entomological nomenclature. Would not the London Entomological Society be the most suitable body to take this matter in hand. A committee might be appointed whose decisions should be submitted to and accepted by general meetings, and representative members of other Societies might be consulted. If they adopted the principle of appropriateness and not of priority, their authority would be universally accepted. Could not you advocate some such scheme, which would confer a great boon upon all who are interested in Entomological pursuits.—(REV.) J. WATSON, Upper Norwood.

Yes, the Entomological Society is the only body that could undertake the work, and they acknowledged their responsibility when they commenced their "Proposed General Catalogue of the Insects of the British Isles." We doubt whether political expedients can be advantageously applied to science, and fear the "reprerentative system" which would give the most ignorant as much power as the most learned, would scarcely answer for naming Lepidoptera. Such portions of the "General Catalogue" as have already appeared were prepared by individuals, and the same course should be pursued by the remainder. Mr. W. F. Kirby, is, no doubt, the gentleman who ought to be selected, and though we do not agree with all his opinions on nomenclature, we would cheerfully accept a catalogue of his preparing. Mr. Kirby says in the "Record" of 15th July, respecting the *Acronycta* muddle—"If every author who alters or improves the characters of a genus considers himself at liberty to re-name it, or to impose a new name on any sub-division of a genus, without enquiring whether any name exists which can be lawfully applied to it, we may as well abandon the study of Entomology as foredoomed to hopeless and irretrievable confusion." This is the point we have always taken, though here much more tersely expressed. It is the constant and purposeless alterations of names that is rendering "science subservient to nomenclature."—Ed. B.N.

CAPTURES AT WARRINGTON.—Last Saturday, (11th July) I got about 30 *C. davus* on our mosses, 3 *E. russula*: *A. strigilaria* was out in abundance, and *A. porphyrea*, I also got 2 *rumicis* at sugar, one a very pale grey specimen. Is not this very late for *rumicis* in fine condition. —J. COLLINS, Warrington.

COLLECTING AT YORK.—My collecting has been mostly done at Askham Bog, just outside York, where I have made some good bags made up with fairly good species. *A. leporina* has been at sugar in numbers, whilst *Collix sparsata* has been the most abundant Geometer. I have met with a very lovely form of *N. rubi* in good condition, the ground colour of which is similar to *X. cerago.*—S. WALKER, York. *17th July 1891.*

Chærocampa Porcellus.—Last night I took a pair of *Porcellus in cop.*, at 1 a.m.; it is seldom, I think, that any of the Sphingidæ have been noticed thus. They were on the head of a tall stalk of grass, and attracted my attention from the brilliant colour of the pair.—E. R. Curzon, Dublin. *19th June, 1891.*

Zygæna loniceræ and filipendulæ at Coventry.—It may interest some of your readers to know that 12 or 13 years ago I brought a quantity of pupæ of these species, and placed them in a suitable position on the Railway embankment. By the third year I found they had separated themselves. There are two bridges cross the line about 300 yards apart Near one of these I found any quantity of *loniceræ* and scarcely any *filipendulæ*; near the other *filipendulæ* was abundant, but not *loniceræ.* Both species are still to be found where I introduced them.—E. F. Nicholls, Coventry.

Agrotis lucernea and Ashworthii.—I have had the good fortune to discover the locality for *Agrotis lucernea* in this neighbourhood. I was after some "Graylings" on the top of a pass, a good 1,000 feet above the sea level, when I saw what I took to be *gamma*, but a difference in the flight made me secure it, and at first I thought it was *Ashworthii*, which I had never seen. I was much pleased and hunted assiduously on succeeding days, taking several more, and yesterday I had the pleasure of taking a real *Ashworthii*, sitting on the face of the rock, and as I shall be here a week longer, I hope now that I have really found it, I may secure some more. *Lucernea* also was new to me, so that if I can get a few more *Ashworthii* I will have reason to be pleased with the results of my holiday.—L. S. Brady, Penmænmaur.

D. Barrettii bred.—I have just had the pleasure of breeding *D. Barrettii* from the pupa. It is an undoubted *Dianthœcea* and not a *Luperina.* The pupa is a light brown colour, and rather elongated, with the ventral projection common to the genus. This I think settles the question as to its proper place in the list. I doubt its having anything to do with *L. luteago*, and always have done so.—E. R. Curzon, Howth, Dublin. *7th June, 1891.*

Plusia moneta in Surrey.—I captured at light, on the evening of July 11th, a very fine specimen of *Plusia moneta*, Fab. I imagined the species to be new to Britain, but find Mr. Richard South recorded the first British specimen in September last. This beautiful moth had, until then, been considered to be altogether absent from North Western Europe, but the occurrence of a specimen this year in a locality so far inland as the Guildford district, seems to point to the fact that it has really established itself in England. It is a large species, expanding 1¾ inches, the forewings of a golden brown colour, with whitish violet shading on the hind margins, apices having a decidedly metallic lustre ; the orbicular stigma is strongly bordered with silver, and beneath it is a curved line of the same. It is figured in the "Entomologist" for last September.

My specimen will be placed in the collection of my friend Mr. Bernard Crocker, of Plymouth.—HENRY C. LANG, M.D., F.L.S., Albury, Guildford, Surrey.

(The recurrence of this pretty species induces us to hope that it has succeeded in establishing itself in Britain. It will be a grand addition to our fauna should it do so. Ed. B.N.)

DIANTHÆCIA BARRETTII AND CAPSOPHILA.—I am glad to say I am busy with *Barrettii* and have taken seven up to date. They are still fine and I do not doubt I shall get more yet. *Capsophila* are very fine this season, but neither of these species come at all freely to the *Silene* this year, and I have had to resort to other methods of capture.—E. R. CURZON. *19th June, 1891.*

PHIGALIA PILOSARIA.—I bred a quantity of *P. pilosaria* from ova this spring. That from the first female hatched within a week of being deposited. That from the other females was examined daily for six or seven weeks, but showed no sign of hatching, and I concluded they were dead, but on looking again some time after, I found they had hatched, and of course were all dead. Is it not strange that what one female deposited should hatch in six or seven days and the remainder not in so many weeks.—W. BROOKS, Sheffield.

CLEORA VIDUARIA AT LYNDHURST.—I was at Lyndhurst for the last fortnight in June and had a very good time of it, taking over 80 species. The best perhaps was *Cleora viduaria*, but they were all welcome.—L. S. BRADY, Sunderland. *17th July, 1891.*

THE PTEROPHORINA OF BRITAIN,

BY J. W. TUTT, F.E.S.

(Continued from page 146.)

Oxyptilus, *Zell.*

The genus *Oxyptilus* is probably more abundant in the Palæarctic than in the Nearctic region. It is one of the most difficult genera in the group, many of the species being very closely allied and probably some of the Palæarctic species will have to be sunk as synonymous with others. In Britain we have five species although two of them, *pilosellæ* and *hieracii* are very rare, the latter particularly so. Two *(distans* and *pilosellæ)* belong to a group with pale ground colour; three *(hieracii*, *heterodactylus* and *parvidactylus)* to a group having a dark ground colour.

In Dr. Staudinger's list we have 14 mentioned as inhabiting the palæarctic area, but of these *lætus* is considered distinct from *distans*, whilst on the other hand *heterodactylus* is not enumerated. Dr. Jordan ("Entomologist's Monthly Magazine," Vol. xviii., p. 121) gives only five American species. The genus is wanting in the angulated apex of the anterior wings, found in the last two genera, and the imagines are the most slender and fragile of the whole of the *Pterophori*, No species of this genus appears to be common to both the Palæarctic and Nearctic regions.

The genus is characterised by Wallengren, viz:—"Antennæ of both sexes with very short cilia. The forehead obtuse, wanting the tuft or cone entirely. The palpi longer than the head, thick, laterally compressed, ascending, the middle joint tufted at its apex, the last joint longer than the tuft, slender, pointed. Legs long and slender, the posterior tibiæ thickened with scales at the middle, and at the apex. The first pair of spines in the posterior tibiæ almost equal, the second pair shorter than the shortest spine of the first pair. The anterior wings cleft more than the third part of their length. The segments slender, the anterior segment with no posterior angle, the posterior segment with the angle distinct. The segments of the posterior wings slender, the third segment linear, and with no anal angle. The anterior wings flat, when at rest covering the posterior; the inner margin of the anterior wings not toothed, the fringe of the third segment in the posterior wings with some black scales near the apex. Veins of the anterior wings eight in number, the first and second separate, springing from the base, the third from the posterior margin of the cell, the fourth dividing into two branches, running from the posterior angle of the cell to the posterior segment, the fifth coming out near the anterior angle of the cell and running to the posterior margin of the anterior segment, the sixth either two or three branched, running from the anterior angle of the cell to the apex of the anterior segment, the seventh from the anterior side of the cell, and the eighth from the base. The cell distinct, closed, the transverse vein very slender, somewhat arched. The veins of the posterior wings three; the first, two branched, running to the first segment, the second, also two branched, running into the second segment, the third simply running into the third segment. No cell.—(" Entomologists' Monthly Magazine," Vol. vi., p. 121—122).*

O. pilosellæ.—This species, which used to occur at Mickleham, was lost for some years, until rediscovered in 1889 by Mr. Sidney Webb, near Dover. It is at the the present time very rare, and, with the exception of the 1889 specimens, and an odd specimen or two in 1890 no other specimens appear to have been recorded as captured in Britain for more than thirty years.

SYNONYMY.—*Pilosellæ*, Zell. " Isis " (1841) 789, Pl., IV., 27, " Linn. Ent. Zeit. VI., 349; Tgstr. Bidr. 155; H.-S. 16, V. p. 372; Sta. Man. II., 442; Frey 408. *Didactyla*, Zett., Ins. Lap., 1013.

I have in my collection a Thuringian specimen sent me as this species by Herr Hoffmann. I have also had the pleasure of seeing Mr. Webb's series of this species which he captured near Dover in 1889, as well as specimens received by Mr. C. G. Barrett from Prof. Zeller (the nomenclator of the species). It appears difficult to believe that the Thuringian example is specifically identical with Mr. Webb's specimens, which are undoubtedly the same as Zeller's specimens in Mr. C. G. Barrett's collection. Mr. South (" Entomologist," Vol. XXII., p. 33) describes a specimen received from Dr. Staudinger which appears to agree fairly with Mr. Webb's specimens, so that the

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*The above ought to have preceeded the account of *O. distans* on p. 141, but was accidently misplaced.

German lepidopterists may have two species in their collections under the one name. At any rate it is a matter worthy of attention.

IMAGO.—Professor Zeller's description of this species agrees (as is to be expected) with the specimens in Mr. C. G. Barrett's cabinet (from Zeller) and those captured by Mr. Webb, and not with the form represented by my Thuringian example, I am greatly indebted to Mr. Webb for the comparisons he has drawn between his specimens on the one hand, and *teucrii* and *distans* on the other. Zeller's description of *pilosellæ* is :—" Alis anterioribus minus quam ad medium fissis rufescenti cinnamoneis, laciniis albido-bistrigatis, ciliis dorsalibus ante apicem laciniæ posterioris lineam albidam indistinctam in basi gerentibus ; digito tertis cinnamones, paulo ante apicem utriusque atro-squamato (♂ ♀)" (" Linnæa Entomologica," Vol. VI., p. 349). Writing to Mr. Webb and pointing out that I had a Thuringian example differing from his specimens, he courteously answered :—" I do not think there is any mistake this time, but that the insect I have is the true *pilosellæ*, although it may differ somewhat from your Thuringian example. Some of the reddish brown ones I took were quite indistinguishable from Gregson's old Mickleham specimens, and identical with Sheppard's too. When fresh out they are nearer the colour of *teucrii*. Colour, size, tuft and silveryness of the markings all vary in individuals, the most constant and best characters being (1) The ochreous pale fringes of the second lobe. (2) The absence of any white feathers (best seen in *teucrii*) on the inner margin of the *first* lobe. (3) The absence of the two minute black tufts on the inner margin opposite the fissure. (4) The tuft on the third plumule of hind wing not extending on both sides of the shaft. (5) The particularly narrow wings, narrower than *teucrii*. (6) The first facia crossing the lobes of the fore wings is always composed of a line, not a blotch as it so frequently is in *teucrii*. (7) There is a contrast in colour between the fore and hind wings, whilst *teucrii* has them almost identical in hue. (8) Underneath, the first digit of the hind wing is not so mottled in *teucrii* but has a much more elongated and distinct white spot near the apex" (*in litt.*). Comparing the Dover *pilosellæ* with *distans*, Mr. Webb writes :-" *Pilosellæ* is not so pale a colour or so coarsely scaled as *distans*, but comes nearer to it in the width of the wing ; some specimens come very near the latter species,* but there are no hoary scales along the inner margin, and the tuft of course is different; in the nearest alike specimens they can be separated by a glance at the underside. The fasciæ crossing the digits of the primaries are parallel in *pilosellæ*, and the outer one makes a continuous line. In *distans*, this outer one is not a continuous line, but the parts in the first and second lobes enclose an obtuse angle, whilst the pale fringes surround the primal digit and another pale line runs from the centre of the fascia to the tip; in *pilosellæ* as I have said before, the fringes are only pale on the costa" *(in litt.)*. Stainton's diagnosis of the species applies almost exactly to Mr. Webb's specimens, which from this I should say were identical with the Mickleham specimens from which Mr. Stainton's description was probably written. It is:—"8½‴—9‴. Very like the preceding *(hieracii)* but rather paler; the pale fasciæ less distinct, and a pale line at the base of the fringes of the hind lobe yellowish instead of white; third feather of hind wing with a black tuft before the tip" ("Manual" II., p. 442). Mr. C. G. Barrett in a very lucid comparison of these closely allied *Oxyptili* writes:—"In *pilosellæ* the costal margin is much arched beyond the middle, so that the apex is long, pointed and drooping. The two pale fasciæ (which, in all these species, cross the divisions of the fore wings) are in *pilosellæ* yellowish-white, oblique, not very narrow nor well defined. The third feather of the hind wing has a large dark brown tuft of scales near the tip" ("Entomologist's Monthly Magazine," Vol. XXV., p. 431).

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*This is what struck me when I saw Mr. Webb's series, and it is this that gives it each a different facies to my Thuringian example.—J.W.T.

LARVA.—The larva is said in the "Manual" to feed on *Heracium pilosella* in June, whilst the same information is to be found in "Merrin's Calendar." Nothing further seems to have been published by British authors.

TIME OF APPEARANCE, &c.—The species occurs in July and August. The Mickleham specimens were all captured during these months, as as also were Mr. Webb's specimens.

HABITAT—The localities given in the "Manual" are Mickleham and Cambridge. Dr. Jordan in the "Entomologist's Monthly Magazine," Vol. XVIII., p. 122 calls it the "Mickleham plume," and in a letter written to me (July 1889), he says:—"*Pilosellæ* certainly used to be common at Mickleham. I have specimens with Stainton's accurate labels and references which prove this without a doubt." Mr. C. G. Barrett writes:—"some doubts have recently been expressed

Presented
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EXCHANGE.

DUPLICATES.—Bledius crassicollis, Donacia nigra, D. menyanthidis, Hecterocerus sericans, Iydroporus nigrita, H. latus, Stenus bipunctatus, Dyschirius salinus, D. globosus, Otiorhynhus ligneus, O. rugifrons, Philorinum humile, Anthobium torquatum, A opthalmicum, Athous ifformis, Bruchus a omarius, Erirhinus nereis, Microzoum tibiale, &c. DESIDERATA.—Offers f Coleoptera or Lepidoptera. A, FORD, Claremont House, Upper Tower road, St. Leonards-n-Sea.

EXCHANGE.—DESIDERATA.—Land and Fresh Water Mollusca of Britain, in exchange for and, Fresh Water, and Marine Mollusca of North America. —A. H. GARDNER, P.O. Box 2. Pay Ridge. Ms. United States of America.

DUPLICATES.—Pupæ of Philanthiformis. DESIDERATA.—Ova, larvæ, pupæ : or bred nsects for renewing.—H. MURRAY, Lowbank Villas, Carnforth.

DUPLICATES.—H. pomatia, H. cantiana, Buliminus obscurus with variety alba, lausilia laminata, Cochlicopa lubrica, Cœcilianella, acicula. Desiderata.—H. revelata, I. fusca, Buliminus montanus, Pupilla secale, Clausilia biplicata, Cochlicopa tridens, tenogyra goodallii, or other land shells (British) not in collection.—E. W. SWANTON, oddington, Sittingbourne, Kent.

DUPLICATES.—Podalirius, Alexanor, Apollo, Jasius, Cassandra, Cleopatra, and many other rench butterflies in very fine condition. DESIDERATA.—Numerous British Geometræ and octuæ, or larvæ or pupæ.—T. MADDISON, South Bailey, Durham.

EXCHANGE.—Algerian Coleoptera, and numerous duplicates of shells, in exchange for land nd fresh water species of the latter, mostly exotic, not in collection. Wanted principally: Gen. ulimus, Diplommatina, Alycoes, Clausilia, Pupa, generally Helicidæ.—C. J. ANCEY, Administrateur-adjoint à Boghari, Algeria.

DUPLICATES.—American Lepidoptera and Coleoptera. Desiderata British or Exotic ombycidæ and Sphingidæ.—Miss EMILY MORTON, Newburg, New York. New Windsor elivery, U.S.A.

EXCHANGE.—I should be glad to exchange rare vars. of H. nemoralis and hortensis with nyone who has paid special attention to these shells.—Rev. J. W. HORSLEY, Holy Trinity icarage, Woolwich.

DUPLICATES.—Boreata, Monacha, and others. Desiderata.—many common species to enew.—A. E. HALL, Norbury, Sheffield.

American Lepidoptera. cocoons and chrysalides of same. American Birds' eggs, Indian elics snd fossils for Exotic Lepidoptera other than European. South American, African nd Australian especially desired.—L. W. MENGALL, Reading, Pa., U.S.A.

TO CORRESPONDENTS.

Owing to great pressure on our space, very many important communications unavoidably tand over, and the Supplement (British Spiders), from the same cause, is also held over ; Plate V. will accompany it next month.

Conchological section.—Mr. Cockerill having sailed for Jamaica, this section is temporarily uspended. Communications in the meantime to be sent to the Editor.

Mr. G. A. Lewcock, 73, Oxford Road, Islington, N., Hon. Sec. City of London Ento. nd Nat. Hist. Society, represents the Magazine in London, and conducts the section of oleoptera

Mr. Lewcock desires indulgence from those correspondents to whom he has been unable to rite, and hopes to be able to answer all shortly.

New subscribers can have such portions of the Supplements as appeared last year as ollows: The British Hawk Moths, 24 pages, 6d ; Hand-Book of British Spiders, 32 pages, 3 plates, 1s. ; British Pterophori, 24 pages, 6d. Subscriptions, and all communications ther than as above, to be sent to JOHN E. ROBSON, Hartlepool.

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THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge, S E. *Thursday, August 13th, Thursday, Aug. 27th.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY, Free Library, William Brown St., Liverpool. Next Meeting 14th September.

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THE

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WITH THE ASSISTANCE IN VARIOUS DEPARTMENTS OF

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elsewhere as to the accuracy of the records of former captures of *O. pilosellæ* and *O. hieracii* in this country. Special interest, therefore, attaches to the re-discovery of the former species this year. My old friend, Mr. Sydney Webb, has forwarded specimens taken by himself near Dover, which agree most accurately, not only with older British specimens in my collection, but with German examples sent me long ago by the late Professor Zeller. That these Dover specimens are genuine *pilosellæ* does not, I think, admit of the smallest doubt ("Entomologist's Monthly Magazine," XXV., p. 451). It has a much more northerly range than *distans* and is found in Scandinavia, being included in Herr Wallengren's list, published more than 30 years ago.

O. hieracii.—This is probably the rarest "plume" (unless we except *brachydactylus*) which inhabits Britain. Mr. South, on the strength of a specimen sent from Dr. Staudinger, as this species, came to the conclusion that *hieracii* must be *pilosellæ* although he had no British example of either species ("Entomologist," Vol. XXII., p. 33). I was myself entirely ignorant of this species until reading Mr. C. G. Barrett's instructive diagnoses of the species of this genus ("Entomologist's Monthly Magazine," Vol. XXV., p. 431), when, critically comparing my own doubtful specimens of this genus, I found I had a specimen taken by Mr. Coverdale, in Surrey, 1881, which was most probably this species, being almost the same colour as *parvidactyla*. My specimen has a strong superficial resemblance to that species, but is as large as *pilosellæ*, so that the species might be easily overlooked.

Synonymy—*Hieracii*, Zell. "Isis" (1841), 827, Pl. 4-5, 20 21, "Linn. Ent. Zeit.," VI., 350; H.-S., 14, V., p. 371; Frey, 408. *Didactyla*, Zett. "Ins. Lap.," 1013.

Imago—As mentioned above, *hieracii* is almost like a very large *parvidactyla*, somewhat similar in colour, but perhaps a little redder. There is a whitish blotch at the end of the cleft between the lobes and two white fasciæ crossing the lobes. The first fascia is almost or quite perpendicular, very distinct, and clearly defined in the upper lobe, but indistinct and scarcely traceable in the lower; the outer fascia is very slender but clearly defined, the plumules of the hinder wing are distinctly paler, the third with a dark tuft placed at some little distance from the tip. Stainton's short diagnosis of the species is:—"9‴-10‴. Forewings brown, with a white spot at the fissure;

each lobe intersected by two whitish fasciæ; the hind lobe with a distinct curved white line at the base of the fringes; third feather of hind wing with a black tuft before the tip" ("Manual," Vol. II., p. 441). Mr. Barrett writes:—"*Hieracii* is of the size of *pilosellæ* but with the costal margin less arched, and the apex more blunt and squared; the fasciæ are more perpendicular, narrower, and more sharply defined. The tuft on the third feather of the hind-wing is brown, and is situated just beyond the middle." ("Entomologist's Monthly Magazine," Vol. XXV., p. 431). Zeller's diagnosis of this species is as follows:—"Alis anterioribus minus quam ad medium fissis, rete brunneis laciniis niveo-bistrigatis, ciliis dorsalibus ante apicem laciniæ posterioris lineam albidam distinctam in basi gerentibus, digiti tertii dorso paulo aute apicem atro-squamato" ("Linnæa Entomologica," Vol. VI., p. 350).

LARVA—Stainton in the "Manual," p. 431 says:—"Larva on *Hieracium umbellatum* in June."

TIME OF APPEARANCE—Stainton in the "Manual," p. 431, gives July and August. I have no further information.

HABITAT—The localities given in the "Manual" are Birkenhead Bristol, Darlington and Newcastle-on-Tyne. My specimen came from Surrey, although I have no more particular data. Like *pilosellæ* it occurs in Scandinavia and Dr. Jordan records it as occurring in the Yisp Valley, ("Entomologist's Monthly Magazine," Vol. XVI., p. 21). In the same Magazine Vol. XVIII. 171, Mr. C. C. Barrett writes:—"I feel no doubt that this species is truly British, although very rarely obtained. I have two species, of the nativity of which I have no doubt, though I cannot ascertain the locality in which they were captured. They were sent to me by a friend who does not collect the group, and could not recollect from whence they came. There were authentic specimens in the collection of the late Mr. T. H. Allis, and I hope they still exist at York." In Drs. Standinger and Wocke's "Catalog" we have the following localities given:—"Central Europe, Finland, Livonia, Carniola, Dalmatia, North Italy, Southern France and Armenia."

(To be continued.)

THE HETEROCERA OF THE ISLE OF MAN.

BY HENRY SHORTRIDGE CLARKE, F.E.S., ADVOCATE.

In compiling the following list I am indebted for valuable assistance to Messrs. Jager, London, and J. H. and C. E. Stott, Bolton. I have also taken several notes from the "Entomologist," the "British Naturalist," and the "Entomologist's Record." To Mr. C. S. Gregson, of Liverpool, my thanks are specially due, not only for important information respecting the Lepidoptera of the Island, but for his kind assistance in perusing and correcting the list, and for the addition to it, of the names of many species which he has taken there during the last 50 years, and which are either unrecorded, or have not been taken by other Entomologists.

NOCTURNI.

Zygæna filipendulæ.—Common all along the coast, occurs plentifully at Onchan. Variety Chrysanthemi, has been bred by Mr. Gregson.

Smerinthus ocellatus.—Local. Obtained six larva once on Cranstal Loch Kirk Bride, feeding on sallow.

Smerinthus populi.—Appears widely distributed, recorded every year.

Acherontia atropos.—Rare, uncertain in appearance, several have been taken near Ramsey at different times.

Sphinx convolvuli.—Generally recorded every year but is uncertain in its appearance, have taken several near Ramsey, one taken on Douglas Head, September, 1889.

Sphinx ligustri.—Local and rare, one specimen taken by Miss Crellin at Onysdale Kirk Michael. Is recorded in "*Vannin Loir.*"

Deilephila galii.—Mr. Gregson has seen several specimens.

Deilephila livornica.—Mr. Gregson has taken five at various times, Mr. Roxburgh took one.

Chærocampa porcellus.—One taken near Ramsey, in June, 1890. Near the Mooragh, larvæ plentiful on *Galium Verum*, on north coast in August.

Chærocampa celerio.—Mr. Gregson once took the larva in June, the imago appeared the following April.

Macroglossa stellatarum.—By no means common, but generally recorded every year, took one at Bride Rectory in June, 1888.

Sesia philanthiformis.—Common at Onchan Peel, Langness and mostly all round the coast wherever thrift abounds.

Sesia tipuliformis.—Larvæ not uncommon in old current trees in gardens at Sulby.

Hepialus hectus.—Only twice, at Abbey Lands, Onchan.

Hepialus lupulinus.—Common at Glen Helen, occurs also at Kirk Bridge.

Hepialus sylvinus.—Occurs near Tromode and at Laxey.

Hepialus velleda.—Very common at Tromode in June, 1890, also at Onchan, Legayre and elsewhere, very variable in size and colour.

Hepialus humuli.—Abundant in old pastures at Onchan and Quarter Bridge.

Setina irrorella.—Mr. Debac of Ballamona has one specimen which he took at Port Soderick, June, 1891, and which is now in my collection.

Lithosia mesomella.—Appears widely distributed.

Lithosia lurideola.—Mr. C. S. Gregson, of Liverpool, records its capture, he took it repeatedly in the perfect state at Bank's Howe and Port Soderick.

Lithosia Complanula.—Appears widely distributed.

Lithosia Caniola.—Mr. Gregson records its capture and has bred the perfect insects from larvæ repeatedly taken by him in warm and sheltered corners on the Coast. He first bred it in the year 1863.

Euchelia jacobeæ.—Common, have taken several in Castle Mona Grounds at different times. Mr. Gregson has taken it commonly near Laxey on the shore at the end of May, and the larvæ on Ragwort in July.

Chelonia plantaginis.—Both this insect and the variety occur at Port Soderick.

Chelonia Caja.—Appears widely distributed, larva common in a lane near Onchan, in May, 1890.

Arctia fuliginosa.—Have taken three specimens only, one at St. Mark's and one near Union Mills, occurs also at Ramsey, Mr. Jager of London, records the finding of larvæ there in September, 1890. I took the perfect insect at Port Jack, June, 1891.*

Arctia lubricipeda.—Common all over island.

Arctia menthastri.—Common all over island.

Liparis auriflua.—Local, have three specimens taken at Lezayre.

Liparis salicis.—Larvæ once near Douglas, in willow.

Orgyia fascelina.—" Ento. Mag." IV., p. 311.

Orgyia antiqua.—Once at Kirk Bridge.

Bombyx neustra.—Once near Douglas.

Bombyx rubi.—Larva very common on mountains and waste lands in September. Took perfect insect at Onchan, June, 1890.

Bombyx quercus=callunæ.—Occurs abundantly on the mountains and heaths.Mr. Gregson records having taken both forms.

Bombyx roboris.—Mr. Gregson states this is the pale lowland form, he has taken it, it feeds on sallow and bramble.

Odonestis potatoria.—Occurs at Lezayre. Local and uncommon.

Saturnia carpini.—Generally recorded every year, occurs on Douglas Head, but is not uncommon on the moors about Laxey.

GEOMETRÆ.

Urapteryx sambucata.—Widly distributed, appears plentifully at Lezayre, where nut trees grow.

Epione apiciaria.—Occurs near Onchan, but by no means common.

Rumia cratægata.—Very common and widely distributed.

Metrocampa margaritata.—Appears local, but occurs at Leyazre and Ballaugh common, in the plantations near Port Soderick.

Selenia illunaria.—Appears widely distributed.

Selenia juliaria.—Appears widely distributed, this is the summer brood and occurs near the Quarter Bridge; Mr. Gregson records its capture from there.

**Fuliginosa.*—I have never seen the type in the Island, it has very bright red under wings with marginal blotches or dots or narrowish marginal line. Mr. Thorpe took the larva in profusion at Glen Helen and gave me a quantity from which I bred var. *semiborealis* Gregson, very dark brown, having only a little red spread on the hind wing from the base; var. *borealis*, Staud., without any red on hind wing; and var. *sub-borealis*, Gregson, very dark brown with hardly any red on hind wings. It will be seen the type is wanting. The island is richer in varities than any other known locality.—C.S.G.

Odontopera bidentata.—Have taken several near Onchan.

Crocallis elinguaria.—Widely distributed.

Amphidasis betularia.—Mr. Gregson records its capture. I took a lovely large specimen at rest on a lime tree at Glen Duff, Lezayre, June 22nd, 1891.

Boarmia repandata.—Local, Mr. Gregson records its capture near Ramsey, in August, 1890.

Boarmia rhomboidaria.—Verry common and widely distributed.

Boarmia perfumata.—Rare, Mr. Gregson records its capture. He states it is a dark variety of *B. rhomboidaria.* Larvæ feed on Ivy.

(To be continued.)

Reports of Societies.

ENTOMOLOGICAL SOCIETY OF LONDON.

August 5th.—Mr. Frederick Du Cane Godman, M.A., F.R.S. President, in the chair.

Mr. Arthur J. Chitty, of 33, Queen's Gate Gardens, S.W., and Captain E. G. Watson, of 5, Lypialt Terrace, Cheltenham, were elected Fellows of the Society.

The President announced the death of Mr. Ferdinand Grut, the Hon. Librarian of the Society, and commented on the valuable services which the deceased gentleman had rendered the Society for many years past.

Dr. D. Sharp exhibited *Japyx solifugus*, from the Eastern Pyrenees, and stated that in his opinion it was a connecting link between the *Thysanura* and *Dermaptera.* He also exhibited pupæ of *Dytiscus marginalis;* one of these was perfectly developed, with the exception that it retained the larval head; this was owing to the larva having received a slight injury to the head. Dr. Sharp also exhibited specimens of *Ophonus puncticollis* and allied species, and said that Thomson's characters of the three Swedish species, *O. puncticollis*, *O. brevicollis*, and *O. rectangulus*, applied well to our British examples, and separated them in a satisfactory manner. Thomson's nomenclature, however, would he thought prove untenable, as the distinguished Swede described our common *puncticollis* as a new species under the name of *rectangulus.*

Mr. F. W. Frohawk exhibited a bleached specimen of *Epinephele janira*, having the right fore wing of a creamy white, blending into pale smoky brown at the base; also a long and varied series of *Epinephele hyperanthus*, from the New Forest and Dorking. The specimens from the former locality were considerably darker and more strongly marked than those from the chalk, Amongst the specimens was a variety of the female with large lanceolate markings on the under side, taken in the New Forest in July, 1890, and a female from Dorking with large, clearly defined white-pupilled spots on the upper side. Mr. Frohawk further exhibited drawings of varieties of the pupæ of *E. hyperanthus*, and also a large specimen of a variety of the female of *Euchloë cardamines*, bred from ova obtained in South Cork, with the hind wings of an ochreous-yellow colour. Coloured drawings illustrating the life-history of the specimen in all its stages were also exhibited.

Mons. Sergé Alphéraky communicated a paper entitled "On some cases of Dimorphism and Polymorphism among Palæarctic Lepidoptera."—H. Goss, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

August 13th.—W. H. Tugwell, Esq., President, in the chair. Exhibits: Mr. J. Jenner Weir exhibited *Psyche villosella*, and illustrated its life history with living larvæ of different ages, and gave most interesting details of its case making, larval habits and manner of pairing. He also exhibited *Pyrameis cardui* remarking on its very wide distribution, and the want of colour difference in the sexes. Along with this he exhibited *Pyrameis dejeanii* in which the male so closely resembled *cardui*, that it might readily be passed as that species, but the female, totally different both in colour and markings, more like *atalanta* in style of marking, but with the red band replaced with another colour. Mr. Frohawk exhibited some remarkable large and fine ♀ *Cardamines*, particularly well marked, bred; he also brought a pet common snake, giving details of its crawling up and lying round his back for warmth. Mr. West showed a nice series of *A. ophiogramma* captured about his own garden. This species occurs round London in gardens where the ribbon grass on which the larvæ feed, is grown. Mr. Watson also showed *ophiogramma*. Mr. Fenn exhibited a grand var. of *O. potatoria*, a female of a dark smoky-fuscous colour, not the form with male coloration, but a much rarer variation. A curious hermaphrodite *Pieris rapæ*, the right side superior wing being ♀, the left ♂, whilst the right inferior wing is rather ♂ and the left ♀, so that, as Mr. Jenner Weir remarked, the insect is quartered. A bleached form of *E. janira* led to a discussion on the cause of this form. Mr. Carrington expressed the opinion that the cause of this bleaching was not from damp, or from light focussed through a dew drop on the pupa, but was rather to be attributed to hereditry. He had been paying particular attention to this insect for several years and his experience was that they always occurred in particular localities, and he judged that several of the same brood inherited the peculiarity. Mr. J. H. Carpenter showed a beautiful variety of *E. hyperanthus*, on the upper side of the inferior wings the ocelli on the underside were also extremely large. Mr. W. H. Tugwell exhibited some very dark and well-marked *Pyralis farinalis*, specimens of *Dioryctria decuriella Hub*, =*Nephopteryx abietella S.V.* bred from shoots of Scotch fir, bearing *Retinea resinella* nodes, which had been collected by Mr. W. Reid in Scotland. He called attention to the fact that the larvæ differed considerably from Dr. Hoffman's description of *abietella* larva, suggesting a possibility of there being two species. He also shewed a beautiful variety of *Botys urticalis* in which the usual black spots were united into long black dashes. He also brought 50 set specimens of *H. lineola* for free distribution to those members who were unable to attend the field day at Leigh, on the 25th July. Mr. Hawes shewed living larvæ of tw species of Skipper. Mr. Hawes is one of our most painstaking aud successful breeders of British Rhopalocera. It is curious how few of our lepedopterists know anything of the larva of many of the commonest butterflies.

Mr. C. Fenn gaye an interesting account of four weeks collecting around Deal, during part of July and August. Sugar during the earlier part of the time was fairly successful but later was quite useless. He captured two *Agrotis ripæ*, which is very rare there, if not new to the fauna. *L. pygmæola* was, as usual, very abundant. *Crambus contaminellus* fairly so. *Melia anella* a few. *Acidalia ochrata* scarce, only two captures being reported. Pupæ of *Odontia dentalis* were to be obtained by working for them in the rosette of leaves round the food plant, and close to the ground. *Argyrolepeia mussehliana* was fairly abundant at Ham ponds, where *Epipactis palustris* grows abundantly and looks so charming. *E. dominula* were still plentiful near Kingsdown. *Nola centonalis* seems lost, an encampment of London boys being pitched right upon its very restricted habitat. About 40 members were present, a large number for holiday times.—*Correspondent.*

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

Thursday, 6th August.—Exhibits :—Mr. Huckett a series of *Geometra smaragdaria* and soms vars. of *Abraxas grossulariata.* He stated that he had bred about 700 of the latter species this season, but had only obtained a few varieties. Mr. Boden, a specimen of noctua bred from a larva found feeding on a tomato. He stated that the larva was brown, and had a curious pig-like head. This specimen led to some discussion, as it was unknown to the members present, the general opinion being that it was an imported species. Dr. Sequeira exhibited a large number of Lepidoptera from Folkestone, including *Sesia chrysidiformis, Lithosia pygmæola, Callimorpha dominula, Tapinostola bondii, Xylophasia sublustris,* and *Ennychia octomaculalis.* Mr, Clark, a series of *Aplecta advena* from Raindean Wood. Mr. Battley, series of *Hesperia lineola* from Leigh, and, for comparison, *H. linea* and *H. actæon.* He also exhibited young larvæ of *Acronycta aceris, A. psi* and *A. megacephala.* Mr. Gates, *Polia serena,* dark vars. of *Abraxas grossulariata, Batrachedra præangusta, Coleophora lineolella,* and cases of the same, all from Shepherd's Bush. Dr. Buckell, *Hadena pisi* from Hampstead and Aberdeen, also living larvæ of *Amphidasys betularia,* the majority being brown, some green or stone-coloured, and a few intermediate in tint. He stated that some of the green larvæ became brown as they advanced in age, but the reverse change had not occurred. Mr. Simes, a very small female specimen of *Lycæna ægon,* a confluent form of *Zygæna trifolii* and specimens of *Hyria auroraria* and *Lithosia complana,* all from the New Forest. He likewise mentioned that he had taken two females of *Apatura iris* in the same locality, one of which had deposited some eggs. Mr. Quail, *Euthemonia russula, Angerona prunaria, Eurymene dolabraria, Numeria pulveraria,* and a nice dark-banded specimen of *Camptogramma bilineata,* all from Epping Forest. Mr. Smith, *Nemeobius lucina* and *Lycæna adonis* from Box Hill, a very white specimen of *Syricthus malvæ, Tethea subtusa, Pericallia syringaria,* &c. Mr. Bayne. *Bombyx rubi,* a dark specimen *Russina tenebrosa, Mamestra anceps, Geometra papilionaria, Phorodesma bajularia,* and a banded form of *Ephyra trilinearia*, all from Epping Forest; also a specimen of *Apamea ophiogramma* from Tottenham. Mr. Fox, various insects from Highgate, including *Thyatira derasa*, *Zylophasia hepatica*, *Cosmia trapezina* and *Plusia iota*. Mr. Milton, a large number of Lepidoptera from Somerset and Devon, including *Argynnis aglaia*, *Anthocharis cardamines* (a female, taken in the middle of July) *Chœrocampa elpenor*, *Zygœna trifolii*, *Euthemonia russula*, *Geometra papilionaria*, *Boarmia repandata* var. *conversaria*, *Coremia picata*, and *Melanippe unangulata*; also a number of ferns from the same locality. He stated that he had seen a specimen of *Eubolia palumbaria* caught by the leaves of the round-leaved sundew, *(Drossera rotundifolia)* and he thought it was unusual for so large an insect to be found in such a situation. *Coleoptera*:—Mr. Heasler, *Heledonna agaricola* and *Conipora orbiculata*. Rev. J. Isabell, a number of beetles from Oberamagau. Mr. Buckell stated that he had just bred a specimen of *Demas coryli* from a larva found this year feeding on hawthorn. This was remarkable for two reasons, that hawthorn was not the general food of this species, and that the insect emerged the same year, showing a tendency towards a double brood.

Thursday, 20th August.—Exhibits:—Mr. Bayne, *Dianthœcia conspersa* and an asymmetrical specimen of *Satyrus hyperanthus* from Box Hill; *Lithosia quadra* from Brighton; a bleached specimen of *Satyrus janira*, *Lithosia mesomella*, *Calligenia miniata*, *Scotosia undulata*, *Halias quercana* and *H. prasinana* from Epping Forest. He stated that he had killed these specimens of *H. prasinana* with cyanide, which had changed them to yellow, but the green colour had afterwards returned.

Mr. Quail, two fine varieties of *Agrotis exclamationis*, from Cambridge, one being melanic, and the other curiously streaked with black, *Leucania conigera*, *Miana furuncula*, and a yellow specimen of *Bryophila perla*, from Margate. Mr. Bellamy, long and variable series of *Apamea oculea*, *Miana strigilis*, and *M. fasciuncula*. Mr. Battley, a black variety of *Amphydasis betularia* from Epping Forest, *Liparis monacha* from Enfield, and *Plusia iota*, *Thyatira derasa*, *Tethea subtusa* and *Dianthœcia capsincola* from Stamford Hill; also larva of the latter, feeding on the seeds of "Sweet William." Mr. Milton, a series of *Hesperia lineola* taken on a sea-wall near Gravesend; also in Coleoptera, *Cicindela campestris*, *Carabus arvensis*, *Toxotus meridianus*, *Pacheta octomaculata*, *Philonthus splendens*, and a series of *Hypera rumicis*, bred from larvæ found feeding on dock. Mr. Heasler exhibited a series of *Anthonomus pomorum*, taken by beating apple trees at Epping Forest.

Mr. Quail stated that a specimen of *Liparis monacha* had been taken by Mr. Smith in Epping Forest. and that he had chased another insect which he also believed was this species.—G. A. Lewcock and A. M. Battley, *Hon. Secs.*

GUERNSEY NATURAL SCIENCE SOCIETY.

The usual monthly meeting of the Guernsey Society of Natural Science and Local research was held at the society's room, Guille-Allés Library, last Tuesday evening, August 11th, Mr. Collinette took the chair, in the absence of Mr. J. Whitehead, the president. The Rev. M. Cann, curate of the Town parish, was unanimously elected a member of the society. Mr. W. Sharp, honorary secretary, read a very interesting and valuable paper on "The Mica Traps of Guernsey," which had been specially prepared and communicated to the society by the Rev. E. Hill, M.A., F.G.S., of Cambridge. The paper gave rise to an interesting discussion; and a special vote of thanks to Mr. Hill for his kindness in preparing it, was passed unanimously. Several interesting specimens were exhibited, and a very pleasant evening was passed. Some further conversation also took place with regard to the habits of the cuckoo, Mr. Cooper having gathered together a number of interesting notes on the subject showing the observations made and the opinions expressed by several eminent naturalists, as to the habits of this curious although not uncommon bird.

Mollusca.

BY W. A. GAIN.

MOLLUSCAN CAPTIVES.—No part of the study of slug and snail life appears to me so interesting as that of the animals in captivity, in fact, many points can only be understood by adopting this method. There was formerly great misunderstanding concerning the junior forms of our slugs. If amusement only is sought, the slugs and snails may be turned into one large snailery, of course avoiding over crowding, and this method will answer if only a few species are kept at the same time.

My plan is to keep each species, often each pair, separate, placing them either in a box with a glass cover, or in a flower-pot having a piece of perforated zinc weighted with a small stone on the top. In either case I have three or four inches of earth and a bottle or two sunk in it to contain water for keeping the food fresh. Many of the British species of *Helix* and all the slugs, are easily kept for long periods, *Helix pomatia* endures confinement well, breeds freely, and the young thrive well; when engaged with fresh crisp lettuce the rasping sounds which they produce while eating may be heard several feet away. I have in my cabinet the shell of a *Helix aspersa* hatched from an egg introduced into one of my boxes in 1882, died presumably of old age, in 1887. Other species are difficult to keep long, *H. virgata* and *H. cantiana* die off, I have never succeeded in keeping even a single one of these through the winter.

My observations would have led me to expect some species to be far more common than we find them, our two species of *Amalia* are exceedingly hardy, very voracious and almost omnivorous, yet they are both rather local in their distribution, from what I have noted of their habits I should have expected them to take the place of our more dainty *Limax agrestis*. *H. arbustorum* is the greatest eater for its size of any *Helix* I have kept, and it takes a greater variety of food, yet this is among our local species; here I only find it on alluvial soil, generally confined to a small area, though like the *Amaliæ*, extremely abundant where it does occur.

I have at present a number of foreign species in confinement, one *Helix* has travelled by parcel post from Australia. Some of the continental species behave rather differently from their British relatives, *H. aperta* for example creeps below the surface, leaving a portion of the shell above covered neatly with earth, so that they look like little lumps of soil. These spend so much time, in this country at least, hybernating and estivating in this manner that they have little time to feed, *H. candidissima* is fond of burrowing rather deeply if the soil will allow it, and remaining several days below ground.

H. undata, from Madeira, appears very much at home and breeds freely, it is rather rapid in its movements. I intend shortly, with the Editor's permission, to give a few extracts from my note book, of facts concerning my molluscan friends.

TUXFORD, NEWARK, *21st Aug., 1891.*

Insecta.—Coleoptera.

GOSSIPING NOTES ON BRITISH COLEOPTERA.

BY G. A. LEWCOCK.

(Continued from page 115.)

METABLETUS, Schmidt-goebebel.—Appears to be derived from two Greek words, *meta*, behind, and *bletos*, struck, and may refer to the truncated apex of elytra. The insects in this and the preceeding genus are classed under one name by some authors, who consider the different points as specific rather than generic. Three species of Metabletus occur in Britain, all of which are not uncommon.

M. obscuro-guttatus, Duft.—This species has a light spot at shoulder of each elytron. It occurs in several localities round London, and can be obtained by shaking roots of grass, in flood refuse, &c. I have found it at Rainham, Barking (Essex), and on the Thames banks generally; also at Tottenham (Middlesex). "Damp places, in moss, flood refuse, &c. Rather common. Kent: Lee, Blackheath, Sheernees, Gravesend, Chatham, Tumbridge Wells, &c. Surrey: Reigate" (G. C. Champion, *Kent and Surrey Coleoptera*). Blackheath, in company with *M. foveola* (West). "Under bark, and at roots of plant generally, near wood fences; Merton, Coombe, Totton (Hants)" (E. A. Newbery). "Under stones and at roots of grass, but not nearly so common as the other two species" (W. H. Bennett, Hastings). "Taken at Weymouth" (R. Gillo). Not recorded from Ireland.

M. truncatellus, L.—Readily distinguished from *M. faveola* by the absence of pores on third stria. Occurs at Barking and Rainham, Essex. "In sandy places, at roots of grass, &c. Local and common. Kent: Sheerness, Deal, Pegwell Bay, Chatham. Surrey: Reigate, Egham, Walton, Richmond, Croydon" (G. C. Champion, *Kent and Surrey Coleoptera*). Deal (West). "Under stones and at roots of of grass, common" (W. H. Bennett, Hastings). "Not common round London; Shirley (Surrey) in Moss; Maidenhead (Berks)" (E. A. Newbery). "Taken at Peckham, in company with *M. obscuroguttatus*" (H. Heasler). Ireland:—"Recorded by Haliday from Portmarnock, Co. Dublin" (Rev. W. E. Johnson).

M. foveola, Gyll.—"Sandy places at roots of grass, &c., common everywhere" (G. C. Champion, *Kent and Surrey Coleoptera).* "Common under stones and at roots of grass" (W. H. Bennett, Hastings). "Abundant on sand hills, Deal, at roots of grass; Hampstead Heath, at roots of furze; Southsea" (E. A. Newbery). "A very common species in the sands at Burnham and Bournemouth" (R. Gillo). "Under stones and heath, Heswall and Bidston" (R. Wilding). "Abundant among dead leaves of the dwarf sallow on the sandhills on both sides of the Mersey; also on Flaybrick Hill, &c." (Dr. Ellis, Liverpool Coleoptera). Not uncommon in sandy and heathy districts. I have taken it freely at Noctorum, Haswell, Burton, &c." (W. E. Sharp). "*M. foveola* is the only species of the genus recorded in Cornwall, it is widely distributed but by no means common" (Rev. J. Isabell). Ireland: Recorded from Portmarnock, Co. Dublin (Rev. W. F. Johnson.

By request of several correspondents I will now deviate from the order laid down in second edition of Dr. Sharp's Catalogue and deal next with the genus Sphodrus.

SPHODRUS, Clairville.—Derived from Greek word, meaning vehement, energetic. *S. leucophthalmus*, L., the species found in this country is probably the most gracefully formed beetle in the British Geodephaga. It is found chiefly in cellars, kitchens, sculleries, outhouses, dustbins, &c., and said to prey on cockroaches. If this is correct, the species ought certainly to be abundant in London refreshment houses where cockroaches prevail to an alarming extent. But up to present time although I have received from these places such species as Blaps, Pristonychus, Tenebrio, &c., not a single Sphodrus has been brought to me. I have occasionally taken some odd specimens in Oxford Road, Islington, but never more than one at a time. In September, 1890 I captured a specimen in my present abode while sitting at supper; it ran across the hearthrug in front of me, when I immediately secured it The species appears to be widely distributed although not common, and doubtless occurs in most of the large cities and towns in the British Isles. From Mr. Champion's excellent MS. list of the *Kent and Surrey Coleoptera* I extract the following note respecting the insect:—"In cellars, outhouses, &c. Uncommon. Kent: Sheerness, Greenwich. Surrey: Walworth, Reigate." "I have taken several specimens of this species in my coal cellar at Peckham, but always singly" (W. C. Chaney). Also taken by Mr. Cripps in cellar, at Clapham. Captured by Mr. Newbery in area, at Bloomsbury. I have received several specimens from Mr. R.W. Thompson, Regent's Park, captured by that gentlemen in his cellar. The plan adopted in the latter instance was to leave a small jet of gas burning, when Mr. Thompson would descend to the cellar and turn up the light suddenly. Should Sphodrus be running about, a duster thrown over it would retard its career sufficiently to enable Mr. Thompson to effect its capture. Mr. Jarvis (now at Cape Town) found several at Kingsland. Also taken by Mr. West at Greenwich. In point of fact, it is to insects such as the one under notice that the term, "London district" would properly apply, as that would include any place in the London postal district.

In country localities the insect is as erratic in its appearance, as in town. Sometimes a specimen will find its way into a coleopterist's collection, and then again years may elapse ere another turns up. In 1890 a specimen was captured in a house at Bolton, by a boy, who took it to Mr. F. W. Paple. At Warrington, the insect was found in company with cockroaches in a beetle trap. Mr. Kendrick who has thus obtained the specimens, kindly sends me the following respecting it.

" Being desirous of diminishing the numbers of those domestic pests, cockroaches, in my kitchen, I have for some time past used a 'Beetle trap' with very satisfactory results. In addition to Blattæ, however, I have frequently found blackbeetles (Blaps), spiders, and other odds and ends entrapped. In September, 1889, I captured a female of *Sphodrus leucophthalmus*, and a few days later a pair of the same species. In 1890, I kept a keen look-out for this insect, and on 31st August obtained a male by same means. During September I succeeded in getting one more specimen, a female, but was surprised on 2nd instant to find a male, somewhat small it is true, which I presume has hybernated. Not having heard of anyone else obtaining this species hereabouts, I am rather surprised at its having selected my house as its special locality.

" The specific name, signifying " *White eyes* " puzzles me, perhaps you can throw some light upon it. It so happened that the only specimen in our public collection here, till I was able to replace it, *had whitish eyes.* It was old and faded, and bore evident signs of having been treated with an excess of corrosive sublimate, hence I concluded this species might possibly be liable to this peculiarity. My specimens however shew no such tendency.*

" It has struck me forcibly for some time that if I could bring under the notice of Coleopterists, especially such as have country or suburban gardens, the desirability of trying some such kind of trap, many species of insects hitherto considered rare might be plentifully met with.† The trap I have used is one of the " Demon " pattern, sold by every ironmonger, but, living as I do in a town, I have little opportunity of giving it its proper scope of usefulness."—(B. Kendrick, *May 8th, 1891.*)

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*One of the specimens in my series has white eyes, but in the remainder dark ones rule. It would thus appear that this feature is not constant.—G.A.L.

†I have no doubt that the trap suggested by Mr. Kendrick would answer the purpose admirably. The method, however, employed by myself and two or three London Coleopterists is to place mutton or beef bones under a flower pot in the garden, and examine daily if possible. By this means many species of beetles are obtained with very little trouble.—G.A.L.

On May 16th, Mr. Kendrick wrote me again :—"I have taken another *S. leucophthalmus*, but as usual the eyes are of the normal colour. However it is somewhat larger than the former one, and the posterior coxæ well developed. From your report it would seem that the name *leucophthalmus* is really authenticated after all." Ireland :—"*Sphodrus leucophthalmus* is, as far as I can find out, not at all common in Ireland. I have not taken it myself, and only know of one locality where it is found. This is on the coast at Malhida, Co. Dublin" (J. Montgomery Browne, Dublin). "*Sphodrus leucophthalmus*, like *Blaps similis*, is thus noted by McNab, following Tardy, 'Dublin city, rare, in cellars.' I have explored some likely places for both genera, but have only found *Pristonychus subcyaneus*" (H. Gore Cuthbert, Dublin).

(To be continued.)

Bledius crassicollis, &c., in the Hastings District.—I took this very rare species in large numbers on June 11th and 19th, in the bank of a ditch at Camber, Sussex. On the first occasion I took about 70, and on the second nearly 150. *B. tricornis* occurred sparingly with it. *Heterocerus sericans* was very abundant in the same ditch, together with plenty of *Dyschirius salinus*, *D. globosus*, *D. æneus* (few), *Lathrobium multipunctum*, *Octhebius bicolon* and single specimens of *Stenolophus consputus*, *Harpalus rotundicollis*, and *Myrmedonia limbata*. On the Camber sandhills I took a few *Sarrotrium clavieorne*, *Onthophagus nuchicornis*, *Ægialia arenaria*, *Crypticus quisquilius*, *Microzoum tibiale* (in profusion), *Notoxus monocerus*, and *Cneorhinus geminatus;* the last two species were also very common.

Donacia nigra.—I have taken this species in abundance on the Bo-peep Marshes near St. Leonards ; it appears to be very local, occurring in one ditch only, within half a mile of the sea. I secured over 200 specimens in two or three visits, *D. menyanthidis* was common in the same ditch ; and I also took two or three *D. dentipes*.

Philorinum humile was very abundant in furze bloom in May, at the same locality. In a stream near Guestling I took about 70 *Deronectes latus* in two or three visits during June, I found them under stones in the stream, which is a particularly swift flowing one, in company with *Agabus maculatus*.

ABDERA BIFASCIATA, Marsh, at Hastings.—I took a specimen of this rare species on July 9th, when beating for Lepidoptera, in a wood near the town. I found it on my coat sleeve; it had evidently dropped from the trees. This is the second specimen that has occurred in this district. The first I swept at Guestling, last year.—A. FORD, Claremont House, Upper Tower Road, St. Leonards-on-Sea, *July 6th, 1891.*

Lepidoptera.

NOTES FOR BEGINNERS.—MICRO LARVÆ FOR THE MONTH.

BY GEO. ELISHA, F.E.S.

With the month of August another busy time commences, which although short requires all our best energies, for it is our harvest among the numerous species that are to be found feeding on seeds externally, or in the seed pods and withering flowers, and we must not forget to take with us on all our excursions at this season a good supply of various sized calico bags, and a few tin larva boxes, for it is wasting valuable time to examine every seed head separately, it is best on opening one or two and finding a larva to cut at random sufficient to fill one of our bags, then tie up the mouth, and so continue till all our bags are filled with the seed heads and leaves, containing larva from the various plants we may come across during our journey, the small tin boxes are useful for larva that occur singly here and there, or delicate external feeding larva that are likely to get injured among the stuff, on being pressed into the bags.

The weather during this month still continues favourable and in the early morning most refreshing and invigorating, but the deepening tints of the foliage and occasional chilly winds is a gentle reminder that the summer weather is gradually passing away, but it is not altogether discouraging, for the pleasure of our rambles is equally as keen at this time of year, or even much later, as in the earlier months, from the fact that each season produces its own specialities.

We must now devote our attention to all the waste pieces of ground we have taken note of, or perhaps searched over during our previous rambles, such as disused brickfields, gravel pits, chalk pits and similar places, where the vegetation grows undisturbed, these are the places from which we are likely to soon fill our bags, although some good things are occasionally found by the wayside, and all seed heads must be taken that have any traces of larvæ, be they ever so small, for they are no further trouble after being put into the cages, there is always sufficient food among the stuff we have filled our bag with to feed up any larvæ that may be amongst it.

One of the most conspicuous plants to be observed at this time in these rough places is the wild chamomile *(Anthemis cotula)* which is generally very abundant, on opening some of the old flower heads we shall probably find a rather fat looking larva which would be that of *H. nimbella* ; it is best to cut a large bagful, for larvæ are not to be found in every head. The thistles also growing here have some of the leaves very much blotched, on turning them over we find the long, straight, light coloured cases of *C. therinella*, this species is somewhat local and most difficult to breed ; other leaves on these same thistles have discoloured streaks all along the midrib and spreading up the side ribs, if on opening this discoloured portion we find a yellowish larva inclining to pink towards the anal segments it would be that of *G. acuminetella.* The Burdock (*Arctium lappa)*, is another plant we must not fail to examine, for now the larva of *A. badiana* is to be found inside the seed heads feeding on the seeds, and towards the end of the month the larva of *P. lappella* is feeding in precisely the same manner. The seeds of Hollyhocks are now being eaten through by the larva of *G. malvella*, and I have on two occasions bred them from larva feeding on the seeds of the musk mallow *(Malva moschata)* a tall growing plant that is occasionally seen growing on the sides of old gravel pits. The various species of Hawkweed (*Hieracium*) should be examined and the seed heads collected during this month and kept in a cool place, from which in due time a beautiful series of *E. dubitana* may be bred, and in the seed heads of the wild carrot the larvæ of *S. rufillana* will be found quite at home, six or seven larvæ are often seen in one seed head.

Towards the end of the month we must visit some wood where the oak trees are bearing plenty of acorns, and search the ground underneath the trees, they are now beginning to fall pretty thickly, we must fill a bag of all the discoloured ones we can find, for they contain the larvæ of *C. splendana*, and from the neighbouring Beech trees another bag must be filled with the beech nuts that hang so plentifully on the branches, for many of them contain the larva of *C. grossana*. These beech nuts must not be thrown away when the time has passed for the moth to emerge, as many of them do not appear till the following year. The larva of *G. campoliliana* may be found burrowing in the woolly substance on the underside of the leaves of the large leaved sallow, and the very large cones formed by the larva of the beautiful *G. alchimiella* (*swederella*) may often be observed on Oak trees. This species is well worth the trouble of breeding, for when just emerged their colours are most vivid. The cones of *G. syringella* on privet, ash and lilac, and *G. stigmatella* on sallows and willows may again be obtained more commonly than in the first brood, and at this time the seeds of *Angelica* and *Heracleum* may be found webbed together by the larvæ of *Æ. flavimaculella*.

On the leaves of Bramble, Whitehorn &c., the curious puckered cases of *C. paripennella* may be found if well looked for, and on nut the brown, stumpy looking, pistol shaped cases of *C. fuscocuprella* may occasionally be seen ; these last are most difficult to breed, generally the whole of those collected dying during the winter. On sloping banks where the yarrow (*Achillea millefolium*) is growing rather commonly, the short brown cases of *C. argentula* will be found sticking about on the top of the close seed heads, the larvæ feeding on the seeds, it is an easy species to breed, if left out in all weathers during the winter. Where the golden rod (*Solidago virgaurea*) is seen growing in open places a good bundle of the seed heads should be taken, for the small, straight, hairy looking cases of the larvæ of *C. vergaureella* are among the seeds, which the larvæ feed on at this time. They are difficult to detect, owing to their close resemblance to the seeds, but when the food plant is put into the cage they are soon seen crawling up the sides, and on the same plant we shall probably have a few larvæ of *B. terrealis*, but as they hybernate, are difficult to get through the winter. The whitish bleached appearance of some of the leaves on oaks, tell us where to find the larva *T. complanella*, on holding the leaf up, the larva is seen in a curved position in its mine. The laburnum trees to be seen growing in suburban gardens have the leaves blotched and discoloured at this time by the larva of that little gem, *C. laburnella*, an easy species to rear by putting the mined leaves in a flower pot, covering the top with leno and keeping in a cool place.

From the middle of this month to the middle of the next, is the best time to collect the larvæ of the genus, *Lithocolletis*, a rather numerous family of very beautiful small moths; they are all leaf miners, feeding between the upper and lower cuticle of leaves, causing the leaves to curve towards the side the larva is at work on, and giving them a sort of puckered appearance, they are quickly collected, the mined leaves being so readily seen, and very easy to breed if when arriving home the leaves are emptied out of the bag and just the mined portion of the leaf cut out, with a piece of the leaf unmined all round the mined portion, which is sufficient for the larva to feed upon, and if all these mined portions are put into glass jars and tightly corked down, they will keep perfectly fresh for two or three weeks, by that time all will have changed to the pupa state.

The larva of *L. tenella*, a local species, feeds in leaves of hornbeam on the underside, and *carpinicolella* in the upperside, *pomifoliella*, in leaves of hawthorn, and apple, upperside, *spinicolella*, in sloe leaves, *faginella* in beach leaves, *salicicolella* in sallow leaves, *viminetella* in osier leaves, curling the edge over, *ulmifoliella* in birch leaves, *spinolella* in the leaves of the broad leaved sallow, *quercifoliella* in oak leaves, *viminiella* in nut leaves, *tristrigella* in wych elm and *schreberella* in common elm leaves, all on the underside, *coryli* in nut leaves, upperside, and *emberizepennella*, mines the leaves of honeysuckle on the underside, puckering up nearly the whole of the leaf, this species does better if put into a flower pot and gauze or leno tied over the top, keeping them cool, there are several other species, but as they are best collected at the end of next month, had better be left till then, but as many species of that numerous family the *Nepticulæ* are now beginning to mine their serpentine galleries in the leaves of the various trees on which they are to be found, there is plenty of occupation for any spare time one may have, after getting all the other larvæ mentioned above, among this last, but numerous family of brilliant little atoms.

Shepherdess Walk, City Road, N.

Notes.

ENTOMOLOGICAL NOMENCLATURE.—I have no wish to press my opinion upon those whose whose knowledge and experience as Entomologists are far more extensive and practical than my own. I only venture to suggest, the London Entomological Society is, as you say, the only body which could undertake to revise and fix the names for the British Insecta. Suppose a committee of the L.E.S. to have been appointed to select names for the British Insecta, which are appropriate and in good taste. They would restrict themselves to British insects of course. Let them begin with Lepidoptera, where the confusion is especially disheartening. There are about 2,200 British species, these may be divided into some ten divisions. When the committee has decided upon suitable names for one such division, let the list be printed and forwarded to the corresponding member of each of the leading local societies. It would doubtless be discussed at meetings of these societies. Their criticisms would then be transmitted to the original L.E.S. committee and would then be considered. Then let the final result be submitted to a general meeting of the L.E.S.; some further revision by the committee might be requisite, but when the selected names have been finally adopted at a general meeting of the L.E.S. we may anticipate that the existing unscientific uncertainty will be for ever abolished. This work is surely necessary, if Entomology is to hold rank as a science.—(REV.) J. WATSON, Upper Norwood. *August 1st, 1891*,

We thought we had made it clear last month that the Entomological Society of London had already undertaken the work in question, though it is fifteen years since any portion of the "General Catalogue of the Insecta of the British Isles" was published. The parts that have appeared are as follows:—

I. Neuroptera, by R. McLachlan, 1870.
II. Hymenoptera (Aculeata) by F. Smith, 1871.
III. ,, (Chrysididæ, Ichneumonidæ, Braconidæ and Evanidæ) by Rev. J. A. Marshall, 1872.
IV. Hymenoptera (Oxyura) by Rev. J. A. Marshall, 1873.
V. Hemiptera (Heteroptera and Homoptera, *Cicadaria* and *Phytophthires*) by J. W. Douglas & J. Scott, 1876.

Fellows interested in the question should raise the subject at the monthly meetings, *and keep on raising it.*—ED. B.N.

2 SEP. 91
BRITISH MUSEUM

EXCHANGE.

Exchange.—Living up collecting; will exchange British Butterflies and Moths for Birds Eggs: (exchange lists.)—**Herbert Pybus**, 19 Pendrill street, Beverley road, Hull.

Duplicates.—Ægon, Subnotata*, Comitata*, Sobrinata*, Flavago*, Augur*, Baja*, Nanata*, Cucullatella*, Semele, Lubricepeda*, Repandata*, Vinula*, Bucephala*, Scolopacina*, Persicariæ*, Triangulum*, Festiva*, Typica*, Chenopodii*, Cribrella*, Flammealis*, H. lineola (fair). Desiderata.—Very numerous.—**H. J. Turner**, 13, Drakefell Road, Hatcham, S.E.

Duplicates.—Salmacis, Artaxerxes, Alsus, Megæra, Mendica*, Villica*, Æsculi, Trepidaria, Pinetaria, Mundana Cæsiata, also a fine pair of A. Sabellæ*.—**T. Maddison**, South Bailey, Durham.

Duplicates.—Many Continential Butterflies in fine condition.—**T. Maddison**, South Bailey, Durham.

Exchange.—Botanical slides wanted. Mounted sections &c., suitable for class work. A packet of good unmounted material from New Zealand will be given in exchange for each slide.—**W. A. Gain**, Tuxford, Newark.

British and European Lepidoptera wanted, especially noctuæ, will give in exchange fine North American species.—Address: **Chas. S. Westcott**, Merchantville, N.J., U.S.A. Box 167, Camden Ca.

Duplicates.—Bledius crassicollis, Donacia nigra, D. menyanthidis, Hecterocerus sericans, Hydroporus nigrita, H. latus, Stenus bipunctatus, Dysehirius salinus, D. globosus, Otiorhynchus ligneus, O. rugifrons, Philorinum humile, Anthobium torquatum, A opthalmicum, Athous lifformis, Bruchus a omarius, Erirhinus nereis, Microzoum tibiale, &c. Desiderata.—Offers of Coleoptera or Lepidoptera. **A. Ford**, Claremont House, Upper Tower road, St. Leonards-on-Sea.

Exchange.—Desiderata.—Land and Fresh Water Mollusca of Britain, in exchange for Land, Fresh Water, and Marine Mollusca of North America. —**A. H. Gardner**, P.O. Box 32, Pay Ridge. Ms. United States of America.

Duplicates.—Pupæ of Philanthiformis. Desiderata.—Ova, larvæ, pupæ: or bred insects for renewing.—**H. Murray**, Lowbank Villas, Carnforth.

Duplicates.—H. pomatia, H. cantiana, Buliminus obscurus with variety alba, Clausilia laminata, Cochlicopa lubrica, Cœcilianella, acicula. Desiderata.—H. revelata, H. fusca, Buliminus montanus, Pupilla secale, Clausilia biplicata, Cochlicopa tridens, Stenogyra goodallii, or other land shells (British) not in collection.—**E. W. Swanton**, Doddington, Sittingbourne, Kent.

Duplicates.—Podalirius, Alexanor, Apollo, Jasius, Cassandra, Cleopatra, and many other French butterflies in very fine condition. Desiderata.—Numerous British Geometræ and Noctuæ, or larvæ or pupæ.—**T. Maddison**, South Bailey, Durham.

Exchange.—Algerian Coleoptera, and numerous duplicates of shells, in exchange for land and fresh water species of the latter, mostly exotic, not in collection. Wanted principally: Gen. Bulimus, Diplommatina, Alycoes, Clausilia, Pupa, generally Helicidæ.—**C. J. Ancey**, Administrateur-adjoint à Boghari, Algeria.

Duplicates.—American Lepidoptera and Coleoptera. Desiderata British or Exotic Bombycidæ and Sphingidæ.—Miss **Emily Morton**, Newburg, New York. New Windsor Delivery, U.S.A.

TO CORRESPONDENTS.

Conchological section.—Mr. Cockerill having sailed for Jamaica, this section is temporarily suspended. Communications in the meantime to be sent to the Editor.

Mr. G. A. Lewcock, 73, Oxford Road, Islington, N., Hon. Sec. City of London Ento. and Nat. Hist. Society, represents the Magazine in London, and conducts the section of Coleoptera

New subscribers can have such portions of the Supplements as appeared last year as follows: The British Hawk Moths, 24 pages, 6d; Hand-Book of British Spiders, 32 pages, 3 plates, 1s.; British Pterophori, 24 pages, 6d. Subscriptions, and all communications other than as above, to be sent to **John E. Robson**, Hartlepool.

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W. K. MANN,

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NATURAL HISTORY,

CONDUCTED BY

JOHN E. ROBSON, F.E.S., Hartlepool,

WITH THE ASSISTANCE IN VARIOUS DEPARTMENTS OF

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SWAN SONNENSCHEIN & CO., Paternoster Square, LONDON.

O. heterodactyla, Haw., Vill. (?).—This beautiful species was introduced into our lists in 1867 as *Pterophorus hieracii;* two years afterwards, Dr. Jordan found out that it was not *hieracii* but apparently a new species and as such, in the "Entomologist's Monthly Magazine" for June, 1869, the species was referred to under the name of *teucrii*, Greening, in a letter written on May 14th. Simultaneously on May 22nd, Mr. Gregson read a description on the same species at the Northern Entomological Society, under the name of *britanniodactylus*, and this description was published in the August number of the "Entomologist" (1869), although referred to under the same name, the previous month, in the "Entomologist's Monthly Magazine." However, Mr. Gregson's name was never accepted, and the first published name, *teucrii*, was used until, in the 'Entomologist's Monthly Magazine,' Vol. XXV., Dr. Mason referred the species to Haworth's *heterodactyla*, which name is now accepted by all our Entomological Magazines.

Synonymy—*Heterodactyla*, Haw. "Lep. Brit." 477; Vill. (?) (1789); Tutt, "Ento. Record," I, 94. *Teucrii*, Greening and Jordan, "E.M.M.," VI., 15; Barrett, "E.M.M.," VIII., 155. *Britanniodactylus*, Gregson, "E.M.M.," VI., 115, "Ent." IV., 305. *Hieracii*, Greening, "E.M.M.," IV., 16-17; Gregson, "Ent." III., 298.

With regard to the synonymy of this species, I wrote in the "Entomologist's Record," Vol. I., p. 94, as follows:—"In 'Entomologist,' Vol. XXII., p. 139-140, Mr. Briggs discussed the priority of *heterodactyla*, Haw. versus *teucrii*, and decided against the former, because it could not be proven that Haworth's *heterodactyla* = Villers' *heterodactyla*, but although our species may very questionably be Villers' *heterodactyla*, I do not think there can be any doubt of its being Haworth's *heterodactyla*, which is the matter we are concerned with. Even if it can be proven that Haworth used Villers' name and description, yet the new use of a name by a new author makes him responsible for this use. Now, Haworth only described *British* species, and there is only one British species with markings similar to *parvidactyla*, to which the description:—'Alis patentibus fissis, nigris, maculis albis' could possibly apply, and that is *teucrii*. I quite agree with Mr. Briggs that if we consider Villers' species, we may well be in doubt, but if we restrict ourselves to British species we can scarcely be in doubt about Haworth's. The name might well read :—

Heterodactyla, Haw., Vill. (?).
Teucrii, Greening.

Haworth assumed (from description) that Villers' species was the same as his own, just the same as he assumed his *didactyla* was the Linnæan *didactyla*, which we now well know, could not have been the case (because *didactyla*, Linn. is not a British species), yet Haworth's *didactyla* is British, and would replace *distans*, were there not already another plume named *didactyla*, Linn. On this ground alone, therefore, Haworth's *heterodactyla*, which we know represents *teucrii*—both from description and from Dr. Mason having Haworth's actual type with the name attached—must in correct nomenclature, replace the latter name of *teucrii*, whilst Villers' *heterodactyla*, about which Mr. Briggs very properly expresses so much doubt, could be ignored, or 'Villers (?)' added after the name."

IMAGO—The imago belongs to the dark-coloured group of *Oxyptili* and is a most beautiful insect. The anterior wings are divided into two lobes of a rich fuscous-brown colour with the outer edge of the costa margined with white, and the inner narrowly paler. In the centre of the wing is a small white longitudinal mark, a white spot at the end of the fissure, whilst two white fasciæ cross the lobes, the inner making an acute angle near the termination of the fissure, the other being almost parallel to the hind margin. The posterior wings are divided into three plumules, the two upper are dark brown, the third pale, and with a distinct double tuft of black scales, the inner large, the outer near the tip of the wing and very small. The head and thorax are of the same colour as the fore-wings, the abdomen as the hind wings but annulated with white; the legs are also dark-brown annulated with white. Haworth's diagnosis is as follows :—"Alis patentibus fissis, nigris, maculis albis." Mr. C. G. Barrett gives the following :—"*Heterodactylus*, Haw. (*teucrii*, Greening), which was at one time mistaken for *hieracii*, is, perhaps, the largest of the group, at any rate, its wings are decidedly broader, and from its dark colour and bright white markings, it is by far the most handsome. Its costal margin is much rounded, tips long and drooping, fasciæ fairly broad and brightly defined, and the inner (dorsal) margin of the fore wings is edged with bright white cilia, in which are three black dashes. The third feather of the hind wing has a large blackish tuft, and the interior portion of the feather is white, with numerous black dots" ("Entomologist's Monthly Magazine," Vol. XXV., p. 431.)

LARVA—The following description by Mr. Buckler, was published by Mr. C. G. Barrett in the "Entomologist's Monthly Magazine," Vol. VIII., p. 155 :—"The full-grown larva is five lines in length, cylindrical, tapering a little behind, and a little in front from the second segment to the head, which is a trifle smaller and rounded; the segments appear very plump from the divisions being deeply cut; it is a pale glaucous-green colour, with dorsal and sub-dorsal lines of dull green; the tubercules are brown, bearing fascicles of numerous white hairs, those on the thoracic segments very spreading, and it is altogether very hairy."

Of the life history of the larva, Mr. Barrett also writes:—"The mode of the life of this larva is sufficiently curious. It gnaws a deep round hole in the side of the stem of a young shoot of *Teucrium scorodonia*, stopping the flow of sap and causing it to droop, then crawls (slowly enough) to the heart and eats portions of the younger leaves, biting them through like ordinary larva, and never, I believe, gnawing the surface of the leaf like some of its congeners, nor entering the shoot like others. It does not confine itself to one shoot, but, after eating bits of several leaves, goes to another, which it causes to droop in the same way. In wet weather the shoots will recover and raise, but if the sun is hot and weather dry, they wither, and serve (like the shoots of spindle when mined by the larvæ of *Hyponomeuta plumbella)* as signal flags to show where a larva is to be found. In confinement, the larva makes no attemp to wither the shoot, but eats the young and full-grown leaves indifferently. Its principal object is, evidently, shelter from the sun, and it is so sluggish that it can hardly ever be seen to move when light is upon it. It is liable to a queer disease, which causes it to become distended, and die in the form of a little hairy bladder. Great numbers die in this way, and from some of them ichneumons emerge, but I think by no means from all." In the "Entomologist's Monthly Magazine," Vol. IV., p. 16, Mr. Greening writes:—"The larvæ feed on *Teucrium scorodonia*, and are now (May 2nd) just changing their first skins; they do not feed down the stems of their food-plant like some of the other "plumes" but eat the young leaves first." Again, on p. 39, he writes:—"When I first found the larvæ, they had not changed their first skins, and were sitting on the tops of the leaves. After the first moult they at once go down the stem until they get to within about an inch and a half of the bottom, and then eat the stem just half-way through, causing the parts of the plant, above where it is bitten, to bend down, and soon to become half dead and very soft; on this part the larvæ feed, and as the plant, getting only a small supply of sap, is not able to grow up, the neighbouring plants, in two or three days, overtop it and cover it up, so that one cannot see it, until one looks well for it under the other plants. One plant supplies food enough for a single larva; for as soon as the bent part is eaten the larva is full-fed, and it then descends to just below where it has bitten the stem half through, where it is very short and stiff, and attaches itself by the tail and changes to a pupa with its head downwards." In the "Entomologist," Vol. IV., p. 306, Mr. Gregson writes:—"The eggs are hatched in autumn, and the larvæ eat small round holes in the upper leaves of *Teucrium scorodonia* growing in sheltered places. They appear in winter as small oval tufts of whitish hair, attached to the underside of the leaves. Early in the spring they move, and eat into the young shoots of the food plant, and in a few days afterwards, if the season is fine, they may be seen on the upper side of the young leaves casting their skins, and then they appear like oblong pinkish bundles of hair. They now begin to eat freely, previous to the next change, and may be easily found, often two or three, sometimes more, upon each side of their food-plant, always on the upper side of the terminal leaves. In a few days they move down the stem, and eat a small round hole in it, about two joints down, which soon causes the tips of the plant to droop, and near this cover they remain for some weeks, eating the young growing leaves around them, until they appear as whitish-green living larvæ, with a retractile head, attenuate to the anus, four to five lines long, and change in May and June to a pinkish and green, which becomes eventually a brown pupa, attaching itself by the tail upon anything near."

Pupa—The pupæ, like the larvæ, vary somewhat in colour, being sometimes pale pinkish, at other times pale green, and occasionally brown, with intermediate varieties, but the pale forms all become darker just before emergence. The dorsal area is covered with minute hairs as in the larval stage. It may be found in May and

June attached to its food-plant, or any suitable object near, by its anal extremity. Mr. C. G. Barrett writes :—" The pupa state seems to be assumed under any convenient object close to the ground, as the hairy pupa is not often to be found on the plants " (" Entomologist's Monthly Magazine," VIII., p. 155). Figures of the different stages of this species are given in the April number of the " Entomologist," Vol. XVI.

TIME OF APPEARANCE.—*Heterodactyla* occurs between the second week of June and the end of July, being much earlier some seasons than others. It is single brooded and hence differs from so many of its congeners. Dr. Knaggs had it as early as June 14th, but the begining of July is a much more usual date.

HABITAT—The species is to be found in woods, on sandy heaths and in gravel pits, wherever its food-plant *Teucrium scorodonia* abounds. It has a wide distribution in Britain. Mr. Gregson (" Entomologist," IV., p. 306) writes :—" It was taken freely at Pettypool Wood, many years ago, by Mr. N. Cooke and others; since then I have met with it in Wales, in Ireland, in the Isle of Man, and, in company with Mr. Hodgkinson, in Westmoreland, and at Humphrey Head in North Lancashire." In Vol. III., p. 298, he also gives " Delamere Forest, and Pant Moen and Pan-y-Garrowin in North Wales." Mr. Atmore records it from Kings Lynn, Norfolk. It also occurs freely at Tilgate Forest, several localities in Dorsetshire, Clevedon in Somersetshire, Folkestone Warren, &c. Dr. Jordan (" Entomologist's Monthly Magazine," Vol. VI., p. 122) says that the species is not known in Scandinavia. In fact it appears to have been almost entirely overlooked on the Continent, as it is not even mentioned in Staudinger and Wocke's " Catalog."

THE HETEROCERA OF THE ISLE OF MAN.

BY HENRY SHORTRIDGE CLARKE, F.E.S., ADVOCATE.

Gnophos obscurata.—Occurs at Onchan. Mr. Gregson has taken the larvæ plentifully on the grassy places on the coast where the grass is short, in April and May.

Iodis lactearia.—Appears generally distributed throughout the island.

Hemithea thymiaria.—Occurs at Tromode, Onchan, Lezayre, and elsewhere.

Hyria auroraria.—Mr. Gregson took this on the heath land, on the road to Peel from Douglas, near a pine wood.

Acidalia subsericeata.—By no means common, occurs at Onchan.

Acidalia candidata.—Taken by Mr. Gregson in the plantation behind Onchan.

Acidalia aversata.—Common and widely distributed.

Acidalia scutulata.—Taken by Mr. Gregson in the plantation behind Onchan.

Acidalia bisetata.—Taken by Mr. Gregson in the plantation behind Onchan.

Acidalia inornata.—Local and uncommon, has been taken at Onchan.

Acidalia promutata.—Mr. Gregson has taken it on the shore from Daly Castle to Growdle bay.

Acidalia fumata.—Mr. Gregson has taken it on the shore from Daly Castle to Growdle bay.

Cabera exanthemaria.—Common and widely distributed.

Halia wavaria.—Common and widely distributed.

Fidonia atomaria.—Common, occurs at Onchan and Lezayre.

Fidonia piniaria.—I took 9 males flying in the sunshine, in the fir woods behind Glen Duff estate, Lezayre, June 22nd, 1891.

Abraxas grossulariata.—Common and widely distributed. Bred some large specimens from larvæ found at Onchan in June, 1890.

Abraxas ulmata.—Local, occurs near Onchan, and Mr. Jager records finding the larvæ at Glen Helen in Sept., 1890.

Mr. Gregson gives the following note: The first specimen of this insect taken, 1864, was a *typical form of "pantaria" Linn*, but though it has been searched for every year since, only *ulmata* form has been found.

Hybernia progemmaria.—Occurs at Kirk Bridge, common.

Hybernia defoliaria.—Widely distributed, all over the island where plantations are.

Anisopteryx æscularia.—Widely distributed.

Cheimatobia brumata.—Appears widely distributed all over the island.

Oporabia dilutata.—By no means common, several taken near Douglas.

Larentia didymata.—Common at Tromode, some very dark forms to be met with there.

Larentia multistrigaria. -Widely distributed.

Larentia cæsiata.—Occurs at Injebreck and is local and rare.

Larentia salicata.—Occurs at Ramsey, plentiful there in 1890.

Larentia pectinitaria.—Widely distributed, plentiful at Kirk Bride and Tromode.

Emmelesia affinitata.—Local and rare.

Emmelesia albulata.—Widely distributed.

Emmelesia albulata v. griseata.—Mr. Gregson records the capture of this variety which is very rare.

Emmelesia decolorata.—Local and rare, occurs at Onchan, larvæ feeds in the seed pods of *Lychnis dioica.*

Eupithecia venosata.—Local, but occurs plentifully at Onchan, very fine and dark forms to be met with there.

Eupithecia pulchellata.— Occurs at Onchan and Lezayre, and wherever Fox-gloves grow.

Eupithecia subfulvata.—Occurs at Onchan, and wherever Yarrow grows freely.

Eupithecia satyrata.—Occurs at Onchan, by no means common.

Eupithecia castigata.—Widely distributed, wherever *Lychnis* grows.

Eupithecia jasioneata.—Local and rare. Mr. Gregson records its capture beyond Growdle where its food plant occurs.

Eupithecia trisignaria.—Local and rare. Mr Gregson records its capture beyond Growdle.

Eupithecia virgaureata.—Occasionally at Onchan.

Eupithecia fraxinata —Occasionally in the Nunnery Grounds, near Douglas.

Eupithecia constrictata.—Occurs at Onchan, Pulrose and Ramsey, larvæ feed on wild thyme in July and August.

Eupithecia nanata.— Mr. Gregson records its capture on the heather.

Eupithecia subnotata.—Occasionally at Onchan, and larvæ on *C. Bonus-henricus* in a hollow beyond Douglas Head.

Eupithecia vulgata.— Common and widely distributed in thorn hedges.

Eupithecia absinthiata.—Widely distributed where ragwort grows. Mr. Gregson adds: a general feeder, common where ragwort grows on the coast in September.

Eupithecia minutata.—Occurs on the mountains and on heather, and near Injebreck. Mr. Gregson gives the following note: Exclusively a heath feeder, larvæ common on heath flowers. These two species are sometimes so alike in the perfect state, that few Entomologists can separate them. The larvæ are very distinct.

Eupithecia exiguata.—Widely distributed.

Eupithecia pumilata.—Widely distributed.

Eupithecia rectangulata.—Widely distributed.

Emmelesia albulata v. nigrosericeata.—At Onchan, but is both local and rare. Mr. Gregson records its capture, he states that this insect is a dark (often almost black) variety of *E. rectangulata*, and is to be obtained in the old apple gardens at Onchan, the larva teats into the blossoms and young apples in May and June.

Hypsipetes impluviata.—Local and rare, occurs at Onchan.

Hypsipetes elutata.—Widely distributed.

Emmelesia albulata v. infuscata.—Rare, Mr. Gregson records its capture, he states this variety which is almost black and occurs at Onchan.

Melanthia rubiginata.—Widely distributed.

Melanthia ocellata.—Widely distributed.

Melanthia albicillata.—Occasionally in a wood not far from Onchan village.

Melanippe montanata.—Very common at Tromode, some very light forms to be met with there.

Melanippe fluctuata.—Common and widely distributed, often very dark and large.

Anticlea badiata.– Widely distributed.

Anticlea derivata.—Occasionally at Onchan.

Anticlea propugnata.—Occasionally at Onchan, Mr. Gregson records its capture.

Coremia ferrugata.—Widely distributed.

Coremia unidentaria.—Local and rare.

Camptogramma bilineata.—Very common and widely distributed.

Comptogramma fluviata.—Local and rare. Onchan is the only locality where this insect is found.

Notes.

NOMENCLATURE.—Allow me to point out that the only remedy for the existing uncertainty in Entomological nomenclature, is a list of names issued by an authority, which all entomologists would acknowledge. The lists issued in 1870, 1872, and 1876, to which you, Mr. Editor, refer in the last number of the "British Naturalist," bear the names of their respective authors, who are entomologists of high repute. But it does not appear that they were adopted at a general meeting of the London Entomological Society. The L.E.S. has, no doubt, passed a resolution that it is incumbent upon the society to issue such lists, but the matter has ended there. In 1872 the late Mr. W. A. Lewis moved against the principle of priority, and prepared a circular, of which I have a copy, which shows that he had obtained about 50 signatures to a petition to the Entomological Society on the subject, but after his melancholy decease, the subject was dropped. We have too many lists of names compiled by individuals, and, of course, each differing from the others; our want is an authoritative list which shall supersede these. In its compilation existing lists must be consulted, and due weight given to them. But a list bearing the authority of the L.E.S., and obtained by some such scheme as that which I sketched in the September number of the B.N. will alone put an end to all differences and secure universal acceptance.—(Rev.) J. WATSON, Upper Norwood, September 7th, 1891.

LYCÆNA ALEXIS IN NORTH KENT.—This species seems to have been unusually large and abundant this past spring and my son and I have taken a fine series, including many good vars. Some of the males closely approached *Adonis* in colour, and in one the fringe was distinctly spotted. The females were exceptionally "blue" and varied more than any I have ever before noticed; the greatest variation was, of course, in the undersides. One is similar to the second fig. in "Newman" (Bond's vars) but the strokes or dashes are much more pronounced in the one taken by us. Another, also a male, is "spotless," and many others of both sexes are more or less wanting in the usual markings. But what I think the best var. is a male, the upper side of which is a dull smoky blue and the under, an uniform smoky brown, having the usual black spots, but small and without the white rings, the orange spots are pale in colour, rather large, and close together, giving the appearance of a band; altogether a very nice insect.—E. SABINE, The Villas, Erith, August, 1891.

VAR. OF LYCÆNA AGESTIS.—Referring to the last described of Mr. Sabine's varieties, I took at Black Hall Rocks in July last, a very similar underside variety of *Lycæna agestis*. The upper side has no peculiarity, but on the underside the black spots instead of having a pure white ring, have a ring only very slightly paler than the ground colour. In varieties of the underside of this species, it is generally the black spots that disappear, and specimens are not uncommon with white spots only. In the var. *Artaxerxes* this nearly always obtains. I have one with no spots at all and many with fewer than the usual number, but I have only once before met with a specimen like that now discussed. JOHN E. ROBSON, Hartlepool, Aug. 25th, 1891.

HESPERIA LINEOLA.—We are indebted to Mr. F. W. Hawes, (a member of the South London Entomological and Natural History Society) for the addition of this interesting little skipper to our meagre list of British Butterflies. It somewhat closely resembles *Hesperia linea=thaumas*, but when once its characters are seen, one feels astonished that it should so long have been overlooked in this country. Its principal habitat with us is evidently in the Essex marshes and rough places adjacent. In July, 1890, wishing to obtain this, then, novelty, I paid my first visit to Leigh, Essex, and worked the rough hilly meadows on to Hadleigh Castle, here, I found a few *lineola* flying with *linea*, the latter being very much the commoner insect. Failing to obtain a good series, I went again to Leigh a few days later and this time, I struck out on to the fringes of the Salt Marsh, here I found *lineola* only, not a single *linea* amongst them, it was almost too late for them, the bulk being considerably worn, but one thing was evident, the home of *linea* was found, it only remained to go again the next season earlier, to obtain as many as one wished. This year, on July 25th, the South London field excursion was to Leigh, under my guidance, and favoured by most propitious weather, all our party (some 20 nets) not only obtained their full series, but will be able to supply the cabinets of their friends.

Given fine warm weather the best time to go for the species would be from the 2nd to 3rd week in July, and then working along the rough grassy fringes of the Salt Marsh from Leigh to Benfleet and probably other such like places, any lepidopterist may obtain *lineola* freely.

They love to sit, particularly towards evening, on the stems of the coarse grasses, flowers of Thistles, semi-dried-up-looking heads of bloom of the Narrow-leaved plantain, when the slanting beams of the evening sunlight, playing on the golden copper colour of their half opened wings give them a bright gem-like look. At this period of the day too, they are not nearly as rapid and jerky in their flight and can readily be captured. The midges will also do their level best to keep you busy, as they bite and dance around you in myriads, but with a new British Butterfly in your satchel you pay them little heed, although on the morrow you find they have added to, if not improved your features considerably.—W. H. TUGWELL, Lewisham, August 9th, 1891.

HESPERIA LINEOLA.—There is no doubt *Hesperia lineola* is common where it occurs, but it is very local, and is entirely confined to the sea walls and the immediate vicinity of the water. As soon as you cross the narrow strip of marsh, *lineola* disappears, and *linea* takes its place. I took 34 good specimens in the few hours I was there, although the day was dull. My friend Mr. Milton has just turned it up at Gravesend in a precisely similar locality, (*vidé* report of C. Lon. Ent. and N. H. Society for Aug. 20th), and I should expect it to be found all along the Thames estuary, if looked for in the right sort of spots.—A. U. BATTLEY, London, Aug., 1891.

NUMBER OF EGGS PRODUCED BY ZYGENA TRIFOLII AND Z. LONICERÆ.—On July 25th I received a box from Mr. Robson containing a most liberal supply of the pupa cases of *Z. loniceræ*, and one of the specimens bred therefrom has laid 296 eggs. To-day I have received a box from my friend P. W. Abbot (supplementing a prior liberal contribution) of two pairs of *Z. trifolii*, taken by him yesterday in cop. in the Isle of Wight. In transit the package got smashed and one of the females had the contents of her abdomen crushed out of her side, and I took advantage of this circumstance to count the number of eggs she had hid within her, they were 306. In general appearance both series of eggs are very much alike but *loniceræ* lays a larger eggs than *trifolii*, the colour (bright yellow), whilst the colour of the eggs laid by *trifolii* are more citron yellow, the form of both are oval and smooth.—C. S. GREGSON, July 29th, 1891.

THE GENUS ACRONYCTA.—I have not at this moment access to the numbers of the "Ent. Record," but I feel certain that Mr.

Lewcock (Brit. Nat." July p. 150) is mistaken if he supposes that the name *Cuspidia aceris* was used previously to the time when it appeared above his signature. Indeed reading his article carefully, I do not think he intended to imply that it was so, but merely that Dr. Buckell and the Rev. B. Smith had used *Cuspidia* in a generic sense earlier. Of course this was this case, as in fact appears in Mr. Butler's article in the "Entomologist," p. 111, but that has nothing to do with the matter. I quoted Mr. Lewcock as one of the authorities, not for *Cuspidia*, but for the combination *Cuspidia aceris*. Dr. Chapman is the only author of *Cuspidia*.—T. D. A. Cockerell, Institute of Jamaica. *24th July, 1891.*

We most sincerely hope that our nomenclature will not be further complicated, by requiring sponsors for every combination of generic with specific names, but in any case Mr. Cockerell is not correct in the above note. The combination of *aceris*, with *Cuspidia* as a generic term, appeared for the first time in the "Record" for August 15th, 1890, p. 130, over the signature of Dr. Bucknell, and dated June 2nd, 1890, as correctly quoted by Mr. Lewcock at p. 150 supr.; this Mr. Cockerell has evidently overlooked altogether. Dr. Chapman is certainly the author of the term *Cuspidia*, but he has never used it as a generic term.—Ed. B.N.

Acronycta aceris.—The pretty larva of this species seems rather plentiful this season. I have taken upwards of 30 at this place recently; and also several at Gravesend.—F. Milton, 164, Stamford Hill, London, N.

Sugar in the North.—We have had a very poor season in this part of the country, at least so far as I am concerned. "Sugar" has been, and is, a complete failure. It worked fairly well on the coast in July and August, but in the woods it was entirely useless. Autumn larvæ are abundant, more so than I ever remember seeing before, which augurs well for next season.—Arthur Horne, Aberdeen.

Beating for Larvæ.—I have been beating for larvæ, and the other day I knocked out 4 *Fagi*, *Coryli*, *Pudibunda*, *Unguicula*, *Falcataria*, *Dromedarius*, *Camelina*, *Psi*, *Temerata*, *Defoliaria*, and *Betularia*, besides an *olla podrida* of unknown species. At the beginning of August I took 10 *Verbasci* larvæ. Is not this rather a late date for the species?—Hy. J. Turner, 13, Drakefell Road, Hatcham, S.E.

NOTES FOR BEGINNERS.—MICRO LARVÆ FOR THE MONTH.

BY GEO. ELISHA, F.E.S.

Autumn is now fully upon us, and during October we must endeavour to get all the leaf feeding larvæ as quickly as possible, for towards the end of the month we occasionally get slight frosts at night, and often cold windy weather during the day, which soon cause the leaves to fall and be scattered in all directions. But even this is an advantage in some cases, for we are able to obtain the larvæ or pupæ of many species of the *Lithocollitidæ* that only feed in the leaves of the upper branches of the trees.

Many of the species occuring last month are still to be obtained, with the slight advantage that those we come across now are about full fed, but it is at the risk of finding many of the leaves and seed heads tenantless if deferred too long, so we must now make the best use of our time and get away on some of the glorious mornings we occasionally get this month, and search the margins and main drives of woods, and the hedges and hedge banks of quiet country lanes.

One of the first plants that attract our notice at this time, especially on dry chalky slopes or hedge banks is that erect composite plant the Spikenard (*Inula conyza*) with its numerous flower heads On opening some of them we shall probably find a fat yellowish white larva with brown head, which would be that of *Gel. bifractella.* It is best to cut off the whole of the seed heads attached to the main stems, and on arriving home, put them into an airy cage in their natural position, and keep them out of doors during winter. There is another growing on chalky soils, viz.: the common Marjoram (*Origanum vulgare*) from which we must not forget to cut a good bagfull of the flower heads, for they contain the larvæ of *Gel. subocellea*, these larvæ have the singular habit of eating out the contents of a seed husk, using it as a case and moving from one flower to another, attaching the dry calyces to its case as it proceeds, till it exactly resembles the case of one of the *Coleophoræ*; they are most difficult to detect on the plant, but when the flower heads are put into the cage may be observed the next day crawling up the sides.

The Maple (*Acer campestris*) have some of the leaves turned down at this time by the larva of *Lith. acerifoliella*, (*sylvella*), and the large mine of *L. cavella* may now be observed in the leaves of the birch. Towards the end of the month we must look for the larvæ of *L. stettinella;* these larvæ mine the upper sides of the leaves of Alder near the midrib, and are generally found in the terminal and subterminal leaves; another species *L. alnifoliella*, mines the leaves on the underside. The fruit of the alder also should now be examined for the larva of *S. pedella*, they feed inside the hard fruit, and are detected by a slight discoloration and a little frass between the scales. The leaves of the dwarf sallow (*Salix repens*) which is found growing on heaths and commons are now being mined by the larva of *L. quinqueguttella*, they mine the whole of the leaf, which appears just sufficient till they are full grown. Towards the end of the month is the best time to search under oak trees for the leaves mined by the larvæ of *L. hortella*, *roborella*, *amoytella* and *heegeriella*, the mine of the last named species is rather large and not puckered, all these species feed in the leaves of the upper branches, and are not to be obtained till the leaves fall. *L. lantella* is another species, which should be searched for at the same time. These larvæ are only found mining the leaves of the twigs growing from the base of the trunks of oak trees, or young saplings, they are seldom found above two feet from the ground, they form a very long narrow mine more than half the length of the leaf and three or four larvæ are occasionally to be seen mining one leaf, causing it to assume a twisted and distorted appearance.

The discoloured hips of the wild rose should now be gathered, for many of them contain the larva of *S. rosetecolana.* The fruit of the sloe and plums should not be forgotten for many of them contain the larva of *C. funebrana*, the leaves of the bramble growing under the shelter of hedges have some of the leaves very conspicuously bleached at this time by the larvæ of *S. marginea (emyella);* the seed heads of the wood rush *(Luzula pilosa)* should now be examined for the larva in their cases of *C. murinipennella;* those plants to be found growing on heaths I have generally found most productive. The case bearing larva of *Col. potentillæ* may now be found bleaching the leaves of the *Potentilla tormentilla* that is found growing under the shelter of furze bushes.

And now we will again pay a visit to some tidal river and search the sea wall and marshes adjoining. On the sandy shore we see some fine plants of the prickly saltwort (*Salsola kali*), if we examine it closely at the beginning of the month we shall probably observe the ends of some of the shoots are covered with a slight web intermixed with grains of sand, if on pulling this apart we find a yellowish green larva it would be that of *G. canella*, these larvæ mine the stems when young, afterwards feeding externally, it is as well to take home some sand with the food plant, for the larva spin their cocoons intermixed with sand. There is another prickly plant only growing on sandy shores, viz.: the sea holly *(Eringium maritimum)*, the roots of which we must now examine for the larva of *A. maritimana*, these larva are to be found eating their way down some considerable distance into the pipe-like roots, and owing to the brittleness of the roots and the depth the larvæ go down, are most difficult to get up without injury.

We must now examine the sea purslane *(Atriplex portulacoides)* growing on the muddy banks, or salt marshes, and are soon busy collecting the cases of *Col. mœniacella*, a week or two later these cases are to be found on the *Suæda maritima;* and examining that robust looking *Atriplex*, the sea orache, growing on the sea wall, the rough looking cases of the larvæ of *C. annulatella* will soon be found on the seeds. The sea wormwood *(Artemisia maritima)* next claims our attention, by beating it into a net, the cases of *Chl. artemisiella* may be taken in plenty, and the larva of *C. Wimmerana* also, these larva draw the shoots together, are rather plentiful, but difficult to breed, as they hibernate, and feed up in the spring; the whitish cases of *C. maritimella* occasionally drop into the net, but had better be thrown out and taken about the end of the following May, being then nearly full grown, the sea lavender *(Statice limonium)* grows rather freely on these marshes, and we must cut a good bagfull of the seed heads, from which in due course we shall breed a nice series of *G. brizella*, I have often bred this species from the above named plant, but not up to the present from *Statice armeria.* The larva of *C. limoniella* feeds on the seeds of *S. limonium* appropriating one of the florets and using as its case, they may be observed sticking on the sides of the stems, into which the larva is eating its way to pupate, the cases soon afterwards drop off, when a small hole in the stem may be observed webbed over. Before leaving this district we must not forget to cut a large bagfull of the seed heads of the *Aster tripolium*, for the obese looking larva of *C. tripoliana* is now to be found inside feeding on the seeds, from which a most variable series, from pale buff to almost black may be bred.

Shepherdess Walk, City Road.

ERRATUM.—For "*August*" in first line of last month's article read "*September*."

Reports of Societies.

ENTOMOLOGICAL SOCIETY OF LONDON.

September 2nd, 1891.—Mr. Frederick DuCane Godman, M.A., F.R.S., President, in the chair.

Mr. W. H. Blaber, of Groombridge, Sussex; Mr. T. D. A. Cockerell, F.Z.S., of Kingston, Jamaica; Mr. R. E. V. Hanson, B.A., of Tunbridge Wells, Kent; and Mr. R. C. Wroughton, of Poona, India, were elected Fellows of the Society.

Mr. G. F. Scott-Elliott exhibited a series of various species of Diptera collected on *Ranunculaceæ*, *Papaveraceæ*, and *Cruciferæ*. He said that during the past summer he had studied about forty species of plants belonging to the orders named, and that they had all been visited by insects which were probably necessary for nectariferous flowers. The majority of the Diptera caught were not confined to one species or even genus, but in view of the unmodified character of the flowers in the orders named this was only to be expected. Mr. Verrall observed that certain insects affected certain plants, but that the *Geraniaceæ* were seldom visited. The discussion was continued by Mr. M'Lachlan, Mr. Kirby, and others.

Mr. W. L. Distant exhibited a specimen of the orthopterous insect *Hemisaga hastata*, De Sauss., which, in the Transvaal, he observed to attack and feed on *Danais chrysippus*, a butterfly well known from its protective character and distasteful qualities to have a complete immunity from the usual lepidopteral enemies. The *Hemisaga* lurked amongst the tops of tall flowering grasses, being consequently disguised by its protective resemblance to the same, and seized the *Danais* as it settled on the bloom. From close watching and observation Mr. Distant could discover no other danger to the life of this well-known and highly protected butterfly.

Mr. T. R. Billups exhibited four species of Diptera, which he believed to be respectively *Oxycera terminata*, Meg., *Pipizella annulata*, Meg., *Clidogastra punctipes*, Meg., and *Oxyphora arnicæ*, L., taken at Oxshott, Surrey, on the 11th July last. He mentioned that all of them were recorded in Mr. Verrall's list only as "reputed British." He also exhibited a specimen of *Hypoderma bovis*, Deg., taken at Plumstead on the 29th July last.

Dr. D. Sharp exhibited several species of *Forficulidæ*, and called attention to the diverse conditions of the parts representing the wings in the apterous forms.

Mr. H. Goss exhibited living larvæ of *Scoria dealbata*, reared from ova. They were feeding on *Polygonum aviculare*, but not very freely; *Brachypodium sylvaticum* had been named as a food-plant for this species, but he did not find that the larvæ would eat this or any other grass.

The Rev. Dr. Walker exhibited, and read notes on, a collection of Lepidoptera, Hymenoptera, Coleoptera, Neuroptera, and Diptera, which he had recently made in Norway. Mr. Champion, Mr. Billups, and Mr. M'Lachlan took part in the discussion which ensued.—H. Goss, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.

September 14th.—The opening meeting for the winter session. The President, S. J. Capper, F.L.S., F.E.S., in the chair.

Mr. C. H. H. Walker read a paper on "Nerves and Nervous Systems," describing the general structure of the nervous system of a typical insect and comparing it with that of a spider, and pointing out the close affinity, which differs only when the economy of the subject rendered it necessary. The paper was illustrated with carefully executed blackboard drawings. Among the numerous exhibits the president showed specimens of the new *Tortrix dinelana* from Galway. Mr. Walker curious varieties of *Vanessa antiopa* which he had bred, from Canada, the black subterminal band and the blue spots being quite absent and the yellow border very wide. Mr. Melville a fine specimen of *Chœrocampa nerii*, captured at Prestwich in 1846. Mr. Newstead several cases of life histories including the full history of the *Sirex gigas*, which he stated had been very common this year. Mr. Prince a fine variety of *Arclia caja*, the fore wings of which were almost entirely brown and the black spots on the hind wings formed a thick dark marginal band; bred by him this year. Mr. Gregson a series of *Lithosea sericea* taken this season. Mr. Harker *Dianthecia barrettii*, from Howth.—F. N. PIERCE, *Hon. Sec.*, 143, Smithdown Lane, Liverpool.

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

September 3rd, 1891.—Exhibits.—Mr. Cooper, a fine variety of *Abraxas grossulariata* Forest Gate, having a solid black band across the wings, the yellow markings being entirely absent. Mr. Mera, a specimen of *Nonagria concolor*, dark vars of *Hadena suasa*, and pale forms of *Agrotis ripæ* and *A. tritici*; also living larvæ of *Acronycta tridens*. Mr. Smith, *Liparis monacha*, a fine dark banded form of *Ennomos angularia*, and *Scotosia rhamnata*, all from Epping Forest; also varieties of *Ypsipetes elutata* from Lyndhurst. Mr. Nicholson, *Lithosia muscerda*, *Minoa euphorbiata*, a fine specimen of *Boarmia repandata* var *conversaria*, dark forms of *Ypsipetes elutata*, and a specimen of *Sirex gigas*, all from the New Forest. Dr. Buckell exhibited a long series of *Acronycta megacephala*, bred this year from larvæ found on poplar trunks in North London last Autumn. One of these was the ochreous form, the remainder varying either in the direction of a dark unicolorous form, or becoming pale (var *turanica*, Stdgr). Only two had a distinct reniform, when examined with a lens. He also exhibited *Strenia clathrata* from Leigh, with the ground colour golden yellow instead of "dingy white" as described by Newman; and a specimen of *Hesperia lineola* from the same locality having the left fore-wing about two-thirds the size of the right. He also showed larva of *Demas coryli*, which varied from yellowish white, to black. Mr. Gates exhibited *Toxocampa pastinum* from Sevenoaks, *Bryophila glandifera* from Brighton, and *Spilodes palealis* from Herne Bay, also an albino of the Common Starling from Brentwood. Mr. Tutt, *Aeronycta megacephala*, *Tephrosia biundularia* var *delamerensis* and a parallel black variety of *T. crepuscularia*, both from South Wales; also a series of *Agrotis ravida* and its varieties from Wicken. Coleoptera:—Mr. Beck, series of *Donacia crassipes D. dentata*, *D. sericea*, *D. affinis*, *Lixus paraplecticus*, &c., chiefly from Christchurch, also a specimen of *Leptura sanguinolenta*, one of the rarest of the Longicorn beetles, which had not been taken in Britain for many years. Mr. Heasler, *Nitidula obscura*, and *Rhizophagus cribratus*. Mr. Milton, *Colymbetes pulverosus*, *C. notatus*, *Agabus conspersus*, *Ilybius fenestratus*, *I. obscurus and Mordella fasciata;* also a specimen of *Tabanus autunmalis*, and an apple twig infested with the scale insect (*Coccus agathinum*). Mr. Battley exhibited a flower of laburnum, picked the same day, and stated that he had seen some fresh male catkins of sallow during the last fortnight. He also exhibited a series of *Apamea ophiogramma* from Stamford Hill, together with the preserved larva, pupæ, and cocoons, and read some notes on the life history and habits of the species.

September 17th, 1891.—Exhibits.—Mr. Tutt, varieties of *Strenia clathrata*, extreme forms of *Boarmia repandata* var *conversaria*, a black specimen of *Tephrosia biundularia*, a pinkish variety of *Agrotis valligera*, several specimens of the red-banded form of *Coremia unidendata*, &c. Mr. Clark, *Agrotis Ashworthii*, bred from larvæ taken in Wales. He remarked that these larvæ fed entirely on the blossom of the dandelion, concealing themselves by day at the roots of the plants. Mr, Battley exhibited *Cerura vinula*, *Nola cuculatella* and *Eupithecia subnotata*, together with parasites bred from each. He also showed a number of cocoons of *Eriogaster lanestris*, part of which had been formed among dead hawthorn leaves, and the rest among paper shavings, the former being much darker than the others. He stated that the silk appeared to be almost white in both cases, but after the cocoon was partly formed, the larvæ injected it with a brown liquid, which caused the dark colour. Mr. Tutt, remarked that he had noticed a similar instance of protective colouring in the cocoons of *Halias chlorana*. which almost invariably assumed the colour of the surrounding objects, if the larvæ had been in the same situation for two days before spinning. If, however, they were placed under the different conditions just before they formed their cocoons, they made them to accord with the colouring of the objects from which they had been removed. Mr. Quail exhibited life histories of *Saturnia carpini* and *Cymatophora flavicornis;* also a preserved larva of *Phorodesma smaragdaria*, and an ichneumoned larva of *Acronycta alni*. Dr. Buckell, living larvæ of *Caradina morpheus*, six weeks old. He remarked that Newman states that this species "feeds throughout the Autumn and Winter until the following May, when it makes a cell rather than a cocoon just under the earth, in which it changes to a pupa" and that Merrin says that the pupa is found in May or June, "spun up in a leaf, or an earthen cocoon attached to the food plant." On the other hand, he had noticed that the larvæ were full fed about the end of November, when they bury, and spin distinct earthen cocoons, in which they remain as larvæ until the end of the following May, when they change to pupæ. It was therefore important to leave the cocoons in damp earth all the winter, or the larvæ would dry up. Several members confirmed these statements, Mr. Battley saying that if the larvæ were brought into a greenhouse about January, they would pupate at once, and emerge in March or April. Mr. Smith, *Catocala nupta* and *Ypsipetes elutata* from Epping Forest. Mr. Milton, *Halias quercana* bred from Epping larvæ, also in Coleoptera, *Dytiscus marginalis*, *D. circumflexus*, *Cetonia aurata*, and *Philonthus splendens*. He also exhibited specimens of a wasp, and remarked that the *cyanide* had changed the yellow bands and legs to red. Other exhibits in Coleoptera were made by M. Bayne, who brought a specimen of *Prionus covarius* from Loughton; and Mr. Clark, who showed *Sphodrus Cucopthalmus*, *Necrophorus ruspator*, *Toxotus meridianus* and *Nascerdes melanura*, from Folkstone. Mr. Clark stated that he had seen a specimen of *Sphinx convolvuli*, which was taken a few weeks ago at Southend. Mr. Battley had found the larvæ of *Phorodesma smaragdaria* fairly plentiful at Benfleet; and imagines of *Lycœna adonis*, *L. corydon*, *Acidalia ornata*, *Aspilates gilvaria*, and several other chalk species near Reigate. Mr. Smith had beaten three larvæ of *Stauropus fagi* in Epping Forest, and several others were recorded from the same locality.

Hymenoptera.—Note.

CERCERIS ARENARIA.—On the 11th July, while walking along the coast, my attention was attracted by, to me, an unusual appearance among a colony of *Cerceris arenaria*. On investigation I observed that a large female had captured a beetle *Otiorhynchus sulcatus*, when she alighted on the sand near the nest, two males, one on each side, flew to her assistance, grasped the beetle, remained only a short time, their object apparently being to make certain she had command over her capture, she at the same time thrusting her sting into her victim most vigourously; I afterwards saw several others brought and the same precaution was taken in each case.

The late F. Smith, in his Catalogue of the British Fossorial Hymoptera, published by the British Museum in 1858, mentions at page 189 that he captured several wasps carrying the above named beetle. I think the above is worth recording, if only to confirm the previous record.—G. C. BIGNELL.

Mollusca.

Molluscan Captives.—Extracts from my note book. *Arion ater.*—August 11th, 1888. Brought home 46 eggs from a cluster of about 60 found in a hedge bottom, opaque, white, oval, 4.5 mm, by 3.5 mm., these proved to be the eggs of *A. ater.* On the 10th or 11th of Sept. these hatched, the young were of a pale fawn colour and 6 mm. in length when extended, on the 23rd they were slightly darker and more red in colour, on the 9th of October they had reached 14 mm., some showed dusky lateral lines and similar lines round the shield, one had the back from line to line dusky as well as the shield, another the shield only of this shade. In the following year ten of this species were hatched on the 3rd of October, these were all pale fawn color without a trace of lateral lines, which were distinctly visible on the 6th of the following month. These slugs attack their weaker brethren, gnawing the skin and not unfrequently devouring the greater part of the victim.

Arion subfuscus.—On the 5th of September, 1888, an individual of this species deposited on the surface of the earth in one of my cases a clump of about 30 eggs glued together in a mass of irregular shape. Each egg was 2.5mm. in diameter, globular, milky white and semi-transparent, afterwards becoming yellowish. On the 23rd a second mass of between twice and three times the size of the first was deposited by the same slug, which had been isolated since the 26th of August. One young slug was seen on the 15th of March following and on the 31st two, the length when extended being 9 mm.

Arion hortensis.—On the 9th of September, 1888, I found a cluster of about 20 of the eggs of this species glued together under a small stone in one of my flower-pots, they resembled those of *A. subfuscus* except in size, measuring 2 mm. in diameter

I have examined the eggs of this species very frequently and at all stages but have never seen them phosphorescent, as described by some writers.

Arion minimus.—On the 27th of August last, two clumps of eggs were deposited by this species, one in a small crevice in the earth of the pot, the other on the under side of a lettuce leaf, each clump contained about 15 eggs adhering to each other, globular, white and semi-opaque diameter 1.7 mm. to 1.8 mm.

2 OCT. 91

EXCHANGE.

*Lepidoptera marked * are bred.*

EXCHANGE.—Giving up collecting; will exchange British Butterflies and Moths for Birds Eggs: (exchange lists.)—HERBERT PYBUS, 19 Pendrill street, Beverley road, Hull.

DUPLICATES.—Ægon, Subnotata*, Comitata*, Sobrinata*, Flavago*, Augur*, Baia*, Nanata*, Cuculatella*, Semele, Lubricepeda*, Repandata*, Vinula*, Bucephala*, Scolopacina*, Persicariæ*, Triangulum*, Festiva*, Typica*, Chenopodii*, Cribrella*, Flammealis*, H. lineola (fair). Desiderata.—Very numerous.—H. J. TURNER, 13, Drakefell Road, Hatcham, S.E.

DUPLICATES.—Salmacis, Artaxerxes, Alsus, Megæra, Mendica*, Villica*, Æsculi, Trepidaria, Pinetaria, Mundana, Cæsiata, also a fine pair of A. Sabellæ*.—T. MADDISON, South Bailey, Durham.

DUPLICATES.—Many Continental Butterflies in fine condition.—T. MADDISON, South Bailey, Durham.

EXCHANGE.—Botanical slides wanted. Mounted sections &c., suitable for class work. A packet of good unmounted material from New Zealand will be given in exchange for each slide.—W. A. GAIN, Tuxford, Newark.

British and European Lepidoptera wanted, especially noctuæ, will give in exchange fine North American species. Address: CHAS. S. WESTCOTT, Merchantville, N.J., U.S.A. Box 167, Camden Co.

DUPLICATES.—Bledius crassicollis, Donacia nigra, D. menyanthidis, Hecterocerus sericans, Hydroporus nigrita, H. latus, Stenus bipunctatus, Dysehirius salinus, D. globosus, Otiorhynchus ligneus, O. rugifrons, Philorinum humile, Anthobium torquatum, A opthalmicum, Athous difformis, Bruchus atomarius, Erirhinus nereis, Microzoum tibiale, &c. DESIDERATA.—Offers of Coleoptera or Lepidoptera. A. FORD, Claremont House, Upper Tower road, St. Leonards-on-Sea.

EXCHANGE.—DESIDERATA.—Land and Fresh Water Mollusca of Britain, in exchange for Land, Fresh Water, and Marine Mollusca of North America. —A. H. GARDNER, P.O. Box 62. Pay Ridge. Ms. United States of America.

DESIDERATA.—Having re-arranged my cabinet I will be glad of specimens of L. sinapis, T. rubi, W-album, pruni, N. lucina, A. Iris, V. Atalanta, cardui, polychloros, M. artemis, cinxia, athalia, A. selene, euphrosyne, S. ægeria, S malvæ, H. actæon, sylvanus, comma, S. paniscus, and will make the best return in my power.—JOHN E. ROBSON, Hartlepool.

DUPLICATES.—Aglain, Selene, Alexis (large forms); Alsus, Artaxerxes, S. Populi, Velleda, Hectus, Mundana, Plantaginis, Fulinginosa (dark form), Versicolora,* Carpini, Vinula, Obscurata, Ericetata, Munitata, Cæsiata,* Populata, estata, Silaceata, Prunata, Elutata* (bilberry form), Suffumata and Var Piceata, Albulata, Sobrinata,* Venosata (Shetland form), Satyrata var Callunaria, Pimpeaellata*, Isogrammata, Pulchellata, Nanata, Pinaria, Ferrugata, Dumetellus, Pratellus, Resinana,* Bergmanniana, Rosana,* Ulicetana (vars), Badiana, Buoliana, Dalella, Longicornis, Nimbella,* Dubitalis, &c. Desiderata.—Common Southern Species if in fine condition.—ARTHUR HORNE, Watson Street, Aberdeen, N.B.

EXCHANGE—Offered, good varieties of British Land and Freshwater Shells in exchange for other not in collection.—E. W. SWANTON, Boddington, Sittingbourne, Kent.

DUPLICATES.—Coleoptera.—Dytiscus circumflexus, Alphitobius diaperinus, A. piceus, Trogosita mauritanica, G. Sylvinus. Lepidoptera.—Pupæ of S. carpini, A. aceris, B. hirtaria. Desiderata.—Coleoptera.—Elater lythropterus, Oxporus rufus, Copris lunaris, Clerus formicarius, Chrysomela menthrasti. Lepidoptera.—Pupæ of *Aprilina*. F. MILTON, 164 Stamford Hill, London, N.

TO CORRESPONDENTS.

Conchological section.—Mr. Cockerill having sailed for Jamaica, this section is temporarily suspended. Communications in the meantime to be sent to the Editor.

Mr. G. A. Lewcock, 73, Oxford Road, Islington, N., Hon. Sec. City of London Ento. and Nat. Hist. Society, represents the Magazine in London, and conducts the section of Coleoptera

New subscribers can have such portions of the Supplements as appeared last year as follows: The British Hawk Moths, 24 pages, 6d; Hand-Book of British Spiders, 32 pages, 3 plates, 1s.; British Pterophori, 24 pages, 6d. Subscriptions, and all communications other than as above, to be sent to JOHN E. ROBSON, Hartlepool.

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THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge, S.E. *Thursdays, Oct. 8th,* and *22nd.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY, Free Library, William Brown St., Liverpool. Next Meeting 12th October.

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NOVEMBER, 1891. *Part XI.*

THE
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Limax arborum has a curious habit of burying itself in a kind of open trough to which it frequently retires, continuing there at rest for a whole day at a time.

Limax flavus.—The eggs of this species are very beautiful when first deposited, they are oval, 7 mm. in length, with a small point at each end as if they had been connected by a filament, which had been broken, colorless and as transparent as a drop of water. These eggs, 16 in number, were deposited beneath a small stone on the 19th of July, 1888, about half of them produced young slugs on the 15th of August, these were very pale yellow and almost transparent, measuring 11 mm. when fully extended; ten days later they had reached 18 mm. and become yellow-green in colour. These slugs delight in frequenting cellars, and I have found their eggs in damp corners within the house.

Limax laevis.—This species deposits its eggs singly for the most part, occasionally in twos or threes. They are oval, usually 2.8 mm. by 1.8 mm., colorless, perfectly translucent. I have seen an egg only 2 mm. in length. They have been deposited on the ground, on their food, and on the glass under which they were confined. The soil contained in the pots in which *L. laevis* is confined should be kept very moist, a good plan is to let them stand in saucers containing an inch or two of water.

Helix arbustorum.—"Found 8 eggs, round, semi-transparent, various shades of yellow."

Helix cantiana.—"Hatched, young, very minute, 1 mm." Eggs not described.

Helix vergata.—"Deposited eggs just below the surface, three were above, white, slightly translucent, diameter 1.8 mm., one very small, 1.1 mm., and yellowish."

Zonites nitidulus.—"Found eggs scattered over the surface, 1.5 mm., white with opaque calcareous shell.

The following notes illustrate the variations in colour which some of our slugs undergo in their youthful stages. In the last half of July I found a small *Arion* concerning which I entered the following description and remarks in my notebook: "Drab with pencil lines sides and round shield, has a white sole and I have not seen it so greatly extended as those from the "Decoy." The latter part of my note refers to a rather large capture of *A. minimus*, some of which at first glance this slug resembled. On the 24th of September I entered the following in reference to the same. "*A. ater*, nearly 1½ inches in length, blackish, sides lighter, yellowish fringe," It is now, 6th October, back black, with scarcely a trace of yellow in the foot fringe, sides blackish, in fact the ordinary black form.

In respect to *A. ater*, I noted a year or so ago a curious fact of which I published the particulars elsewhere. A couple, one black the other light drab, paired in one of my cases, the black deposited eggs, many of which hatched, and all of which resembled the other parent in color, being however rather lighter at first, and developing lateral lines of a slightly darker hue in about a month. These disappeared later through a gradual and slight darkening of the whole upper surface of the animal. I was not aware till that time that *A. ater* was banded in youth and was doubtful whether this banding would or would not be found in the black variety, however the notes previously given show that this also has lateral lines at an early period.*

I have been led by my observations to the conclusion that the greatest enemies of our terrestrial mollusca are the *larvæ* of small Dipera, of at least two species. From the commencement of my breeding experiments I had observed a number of little black flies, not unlike those produced by the cheese hopper, they are so small as to be able to get through the holes in the perforated zinc with which my pots are covered, in time large numbers of *larvæ* are produced which prey on the eggs of the slugs and snails, I have frequently had a fine batch of eggs from which I was hoping to get a good supply of young mollusks, when on the next inspection their place has been occupied by a few fragments of the outer portions—shells of the eggs, and a wriggling mass of these, to me, pests. My notes describing them are as follow: 6th September, 1889, "Eggs of *A. subfuscus* pale green—other eggs of this species are described as becoming yellowish." 30th November, "Eggs disappeared, in their place Dipterous *larvæ*, translucent, from ¼ to ½ inch in length." 5th November, "These *larvæ* extended 1 inch, fine as a hair." 8th November, 1890, "A number of *larvæ* appeared . . . the greater part of the eggs destroyed. These *larvæ* are ½ an inch in length, broader than those previonsly observed, quite white and transparent as glass, the intestinal canal clearly seen as a brown streak, heads shining black."

---

* Since writing the above I have read the article on this species in Dr. R. F. Scharff's admirable treatise on "The Slugs of Ireland," published in the transactions of the Royal Dublin Society for the present year, in which this fact is fully recognised.

I will transcribe two short notes on the effects of light on *A. ater*, the results were as will be seen, quite unexpected. 12th May, 1889, "*A. ater* placed under glass to try the effect of light on colours, the dark is slaty-black, the lighter fawn, both with light coloured foot fringe." 27th June, "The two *A. ater* placed under glass weigh rather more than 190 grains, those still under perforated zinc rather below 100 grains, no alteration in color from exposure to light, when separated all were apparently of equal size."

W. A. Gain, Tuxford, Newark.

Notes on Decollate Shells.—I have frequently had occasion to observe, when collecting Clausilias in any number, the occurrence of decollate shells. This form of monstrous variation is best known to English collectors in the genus *Limnæa*, and most satisfactorily exemplified in the familiar *Bulimus (Stenogyra) decollatus L.* of the Mediterranean region.

I am inclined in this particular genus *(Clausilia)* to account for decollation by a very obvious theory, which probably no one has thought it worth while to ventilate hitherto on account of its triviality. Any conchologist scrutinising an old wall in ordinary dry weather must have noticed how conveniently for his purposes many of the *Clausilias* project from their coverts, the length of the shell rendering seclusion impossible. This results in the tip of the shell getting bleached (a constant phenomenon), and continued exposure would further tend to disintegration of the affected whorls, and finally to their disappearance, the animal perhaps taking part in this last stage, when his top storey had become dismantled and uninhabitable. Dr. Jeffreys rather vaguely says of the top whorls of *Truncatella truncatula Drap.* that they are "deciduous at the proper season." This species, however, is marine and invariably decollate at maturity, as is *Bul. decollatus*, in which the loss of whorls must be considerable, judging from youthful examples.

Anyone who knows Guernsey will remember the moss-grown fort walls above the town of Peterport on the south side. These walls, arid and moistureless to a degree in summer, support large numbers of *Balea* and *Clausilia rugosa* in all stages of growths, and here among the latter I have noticed many decollate adults. Both these species habitually burrow into the little knobs of moss on these walls, and after getting well in, they apparently proceed to hollow out the tuft as a means of protection and sustenance, though some tips are always noticeable. *Balea* from its smaller size seems to be more successful in escaping the final effects of the solar influence, though frequently bleached at the apex. On detaching these small tufts of moss carefully, youfind many of them a mere shell, with families of *Clausilia* and *Balea* packed tightly together inside, as often as not fellow-lodgers.

In some species of the marine genus *Eulima*, it is the usual thing to find the shells thus truncated, nor does any species of *Eulima* (within *Dr. Jeffreys' experience) actually inhabit the top whorls even when intact. Here, however, the decollation seems to take place more arbitrarily both in the case of species and amongst individuals of a species, and of course the only parallel intended to be adduced is one of occurrence. One haul of the dredge off Guernsey this summer contained seven live adults of *Eulima polita L.* (the most commonly decollate *Eulima*) and of these 3 were absolutely faultless and 4 had replaced their beautifully tapering apices by the usual flat shelly plate. As a purely accidental loss, I have noticed the feature of decollation in several species of *Trochus* (e.g., *zizyphinus* and *umbilicatus*), showing their capability to live thus curtailed. Compare Jeffreys' record of a *Eulima polita* living with only three whorls left.

To return to terrestrial forms, I may mention that during a considerable experience of *Clausilia Rolphii* I have never found a decollate specimen, this being entirely a retiring and ground-loving species. Of *C. laminata* and *C. biplicata* I cannot speak with much knowledge, and shall be grateful for other observers' experience. On the other hand I can cite several non-British species that throw light on this subject, for instance, that common North Italian shell, *C. itala*, Marts., which swarms on walls and faces of rock round Lake Como, is frequently decollate, and *C. parvula* Stud., with rather more retiring habits, occasionally presents the same variation in France; whilst any conchologist who pays the inevitable visit to the Glacier Garden at Lucerne will not fail to note quite a number of decollate shells amongst the stores of *C. cruciata* Stud., *C. parvula* Stud., and *C. plicata* Drap. that he sweeps off the rocks with such avidity.

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* Jeff. B.C. Vol. iv, p. 204.

The following British land and freshwater shells are all that I know of as possessing a "*m. decollatum*": *Bythinia tentaculata*, *Limnæa peregra*, *L. glabra*, *Claus. rugosa*,. Additions are much to be desiderated. I have had from Lucknow, (India), many specimens of *Paludina melanostoma* Bars., characteristically decollate, but am not aware of its occurrence in *P. contecta* or *P. vivipara.*

Brockton Tomlin, Llandaff, 15th August, 1891.

Bythinia Tentaculata in the Erie Canal.—The Nautilus of last month records that since the introduction of *Bythinia tentaculata* into the Erie Canal, New York, some years ago, it has driven out the purely American species *Goniobasis virginica* by consuming their food. According to the experience of Mr. W. M. Beauchamp, who has observed the species from its first discovery in alien waters, it prefers canal waters to any other habitat. We hardly think that English observers will confirm this.—Id.

Vertebrata.

"WHAT IS A BIRD?"

BY LINNÆUS GREENING.

(Concluded from page 167.)

Having seen how birds breed true to their species, subject to those variations which, though common to all groups of organisms, are in birds so slight as to be scarcely perceptible, we can realize how great has been the lapse of time necessary for the production of our present well-marked species and how many centuries have rolled away whilst such slight individual variations have been accumulating till our existing birds have arisen from their far-off reptilian ancestor.

The fact that birds breed so true to their species is by some made the basis of their their objection to the doctrine of descent. Such objections, however, arise from an imperfect apprehension of the facts. Existing organisms, by their existence, prove their adaptability to their surroundings; unless their surroundings materially alter they will not themselves materially alter. If the struggle for existence be keen, the probability of any deviation from the parental type is immensely diminished, for the simple reason that only favorable variations can be preserved and the parental type must be most favorable otherwise it would not exist

When birds, or rather small bird-like, feathered reptiles, began to fly there were no other flying vertebrates, and, as a consequence, the struggle for existence amongst those forms would not be so keen as it now is, and therefore variations though perhaps not occurring more frequently than at present, would certainly have a better chance of being preserved. With reference to the so-called fixity of species it may not be out of place to mention that ornithologists have till quite recently recognised two species of Goldfinch as occurring, one in England *(Cardelis elegans)*, and the other in India *(C. Himalayansis)*. If the distinctive characters of species, generally recognised by ornithologists, are worth anything at all, if, in fact, the word species has any meaning, then the Indian and English Goldfinches belong to distinct species. But the researches of Seebohm have shewn that there exists a series of transitional forms whose intermediate stages make it impossible to say whether the central form belongs to one or the other species. In other words, a traveller whose sole object was the study of Goldfinches, setting out from the Himalayas northward across Siberia, then bending westward through Russia and Germany to England would be unable to say at what part of his journey the Himalayan species ended or the English one began. Anyone who wishes to verify this statement has only to go to South Kensington Natural History Museum and see for himself the various intermediate links which are beautifully arranged in a case in the great hall. The "fixity of species" man, says that the earlier naturalists had here made a mistake; that the two were simply local varieties of one species. Arguing by analogy he would tell us the Ostrich and the Humming Bird are local varieties of one species if we could produce to a hair, the intermediate links which a perfect knowledge of the life of past geological epochs would supply, and with his answer I quite agree, but what about the fixity of species?

Perhaps for beginners the most serious objection to the assertion that a bird is merely a feathered reptile, is due to the absence of any transitional form, and to the fact that, so far as he can see, all birds are birds, and as far as history goes birds are now what they have ever been. To get a true knowledge of the origin of birds he must go back to pre-historic times and search amongst the fossil forms, when he will find remains of birds with teeth, birds with long reptilian tails, wingless birds of gigantic size, and other curious forms of birds which once existed, but which have no modern representatives, just as there are modern birds of which we can find no trace in the fossiliferous strata. He must also remember that his lifetime, nay all the centuries of which we can be said to possess any documentary history, are but as a second of time in the eternity which has passed. A little experience will teach him that he can produce marked varieties from a common stock, for instance, from the Rock Dove *(C. livia)* he can produce in a comparatively short period of time, almost any form or colour he may wish, and if such wonders can, in the lifetime of one man, be produced by artificial selection what can, or rather what has been produced by natural selection in the countless æons that have passed since the first protists swam in the seas of a bygone world.

To come back to the question with which we started out, "What is a bird," I trust that what has been said will have made it clear that it is, firstly, an animal; secondly, that it belongs to that great kingdom of animals which we call vertebrate or backboned; thirdly, that it belongs to that group of vertebrates which is called sauropsida, because of its affinity to lizards; fourthly, that it differs from all existing reptiles in the possession of feathers, though probably in this respect there have been in the past transitorial forms; fifthly, that it differs from all existing reptiles in the temperature of the blood which is higher even than in mammals, though again probably ancestral transitional forms forbid us asserting this to be, as between reptiles and birds, a distinctive character. If nothing has been proved it is likely that the difficulty of defining what a bird is has been made abundantly evident. If anyone can favor me with a concise and accurate answer to the question "What is a bird" I shall be grateful, but I trust our time has not been wasted, that our conceptions of the origin and affinities of birds have not been more hazy and that we have had a glimpse of what is meant by the plasticity and antiquity of age.

112 Bewsey Road, Warrington.

Ovarium of a Domestic Fowl.—A brown double combed domestic fowl was hatched 1st May, 1889, laid its first egg Jan. 7th, 1890, laid January, February, March, April, and May, resting June and July, and laying again through August, September, October, and November resting again in December, 1890, and in January, 1891, commencing to lay again. She continued to lay through February to May when she moulted. She was killed, fat, for the table, 14th July, 1891, and dissected. The ovarium had then more than 400 eggs still within it, but no advanced eggs; about 30 all slightly advanced, many are of the size of No. 5 or 6 shot, all others being the size of mustard seed or less.

She usually laid four days and missed one, this giving 6 eggs per week. Her first "lyter," five months, therefore gave 125 eggs; her second "lyter," to November, 1890, was 90 eggs; her third, 10th January, 1898, to end of May, was 110 eggs, total 325. After laying all these eggs it will be observed she still retained about the average number in her ovary. I have secured progeny from her this spring. Though such an excellent layer it will be observed she only had about 30 eggs advancing for her next "lyter," a proof that no fowl will pay to keep after her second year.– C. S. GREGSON, Liverpool, Aug., 1891.

Reports of Societies.

ENTOMOLOGICAL SOCIETY OF LONDON.

October 7th.—Dr. David Sharp, F.R.S., Vice-President, in the chair.

The Chairman referred to the death, on the 14th September last, of Mr. E. W. Janson, who had been a member of the Society since 1843, who had formerly filled the offices of Secretary and Librarian respectively.

The Rev. Dr. Walker exhibited a long series of several species of *Erebia*, and of *Argynnis pales*, which he had recently captured near Roldal, in Norway.

Mr. W. L. Distant exhibited specimens of *Danais chrysippus*, with its two varietal forms, *alcippus*, Cram., and *dorippus*, Klug., all of which he found together in the Pretoria district of the Transvaal. Mr. Jenner Weir, Colonal Swinhoe, and Mr. Distant took part in the discussion which ensued as to these forms and their distribution:

The Rev. W. F. Johnson sent for exhibition specimens of *Velia currens* from stagment water near Armagh; also a specimen of *Nabis limbatus*, killed whilst holding on to its prey, a very hard species of Ichneumon. Mr. Saunders thought that, from the nature of the Ichneumon, the only chance the *Nabis* had of reaching its internal juices would be through the anal opening, as recorded by Mr. E. A. Butler in a similar case, in the Ent. Mo. Mag., Oct., 1891.

Mr. F. P. Pascoe exhibited two British species of Diptera, unnamed. He said they had been submitted to Mr. R. H. Meade, but were unknown to him, and are probably new to the British list.

Mr. R. Adkin exhibited two specimens of a supposed species of Tortrix *(Tortrix donelana*, Carpenter), bred from larvæ found on pine trees at Tuam. Mr. C. G. Barrett said he examined the specimens with great care, but he did not consider that they belonged to a new species. He was unable to distinguish them from *Tortrix viburnana*.

Mons. A. Wailly exhibited preserved larvæ, in various stages, of *Citheronia regalis*, which he had bred from ova received from Iowa, United States. He said that the natives called this larva the Hickory Horned Devil, and that the specimens exhibited were the first that had been bred in this country. Mons. Wailly further exhibited three female specimens of *Antheræa yama-mai* bred from cocoons received from Japan; also a nest of cocoons of *Bombyx radama*, received from the west coast of Madagascar. Prof. J, B. Smith, of the United States, and Col. Swinhoe took part in a discussion on the habits of the larvæ of *Citheronia regalis*, and as to the period at which they dropped their spines prior to pupating.

Dr. Sharp exhibited several specimens of a weevil, *Ectopsis ferrugalis*, the ends of the elytra of which bore a close resemblance to the section of a twig cut with a sharp knife. He said he had received the specimens from Mr. G. V. Hudson, of Wellington, New Zealand, who states that they were found resting in large numbers on dead trunks and branches of *Panaz arobea* in the forests.

Mr. G. C. Champion stated that the species of *Forficulidæ*, captured by Mr. J. J. Walker, R.N,, in Tasmania, and exhibited by himself at the meeting of the Society in April last, was, he believed, referable to *Anisolabis tasmanica*, Bormans, described in the "Comptes Rendus" of the "Ent. Soc. Belgique," 1880, p. lxviii.

The Rev. A. E. Eaton made some remarks on the synonymy of the *Psychodidæ*, and stated that since August. 1890, he had identified all of the British species in Mr. Verrall's list, except *Sycorax silacea*.

Mr. Gervase F. Mathew, R.N., communicated a paper entitled "The Effect of Change of Climate upon the Emergence of certain species of Lepidoptera." A discussion followed, in which Mr. Stainton, Mr. Barrett, Dr. Sharp, and Mr. M'Lachlan took part.—H. Goss, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

October 24th.—W. H. Tugwell, Esq., Ph.C., President, in the chair. Mr. South referred to Mr. Weir's remarks at the previous meeting on specimens of *Arctia caja*, with black antennæ and exhibited two examples from Mr. Leach's collection, one English and the other, which had been named *Euprepia phocosoma*, Butler, from Japan, having blackish antennæ; Mr. Tugwell also exhibited two examples from his series. Mr. C. G. Barrett pointed out that in none could the antennæ be described as black. Mr. J. H. Carpenter exhibited very blue forms of *Lycenæ icarus*, from Sussex. Mr. Barker, a specimen of *Leucania albipuncta*, taken at Folkestone during August. Mr. Jenner Weir, a specimen of *Bombyx mori*, bred from a cocoon found by him on a Mulberry tree in his garden at Bechenham, and stated that although he had made every possible enquiry he could not learn that anyone in the neighbourhood had been rearing the species. Mr. Tugwell and Mr. South both remarked on the wings of the specimen being fully developed, Mr. South adding that in Japan there were two forms of the species, a domestic one and a wild one, and some one might have been rearing the wild form. Mr. Tugwell, specimens of *Epinephele tithonus*, with three distinct ocelli on each of the superior wings. Mr. Tutt remarked that he had recently recorded this form, Mr. Frowhawk had noticed it at Chattenden, Mr. Carrington in Essex, Mr. Hawes had received it from Dexon and Norfolk, Mr. Briggs had seen it at Wandsworth and Wimbledon, Mr. C. G. Barrett said that although he had examined large numbers of the species in Pembrokeshire he had never found any specimens so strongly marked as were those of Mr. Tugwell. Mr. R. Adkin exhibited species bred from larvæ received from Forres, together with Southern examples for comparison, and made remarks thereon; he also exhibited a specimen of *Cabera pusaria*, in which the first and central lines were very close together, a feature regarded as indicating the form *Cabera rotundaria*, and some observations were made relative to this last exhibit, reference being made by Mr. C. G. Barrett to the series bred by Mr. Atmore, in which he had every intermediate form between the two, one specimen being *pusaria* on the one side and *rotundaria* on the other. Mr. C. Fenn exhibited *Calymnia diffinis*, varieties of *Agrotis exclamationis*, *Dasypolia templi*, a very small dwarfed form of *Melanippe fluctuata*, and a long bred series of *Cidaria russata*, and the three parent females, and remarked that all the ova were laid within a few days of each other but there was an interval of seven weeks between the emergence of the first and last specimens, while a portion of one brood was now preparing to hibernate. Mr. T. R. Billups, a specimen of *Deilephila capensis*, one of three said to have been captured at sea, 472 miles from land. Mr. C. A. Briggs two varieties of *Melitæa artemis*.

October 8th.—The President in the chair. Mr. Walter Smith of Teddington was elected a member. Mr. Tugwell exhibited *Agrotis agathina*, and *A. strigula*, Southern and Northern forms; also *Noctua castanea*, from Perthshire, and the var. *neglecta*, from the New Forest. Mr. Tugwell, on behalf of Mr. Boden, exhibited a specimen of *Prodenia littoralis*, Boisd., bred from a Tomato, the pupa case was also shown. Mr. South remarked that the species was fairly common in India. Mr. Jäger, *Callimorpha hera*, and var. *lutescens* bred from ova, also *Agrotis ripæ*, bred from larvæ taken on the the Essex coast, some of the specimens were very light. Mr. West, a variety of *Catocala nupta*, taken at Streatham, having the inferior wings streaked with yellow. Mr. H. J. Turner, *Zygæna melitoti*, from the New Forest, taken this season, *Xylophasia polyodon*, from the North, *Hepialus velleda*, from Lynesford, Kent, and the North. Mr. A. Robinson a long and varied series of *Nonagria cannæ*, taken by himself and Mr. Bond in Norfolk. Mr. R. Adkin, *Sesia musciformis*, from the Isle of Man and Cornwall, and remarked that those from the former locality appeared the more robust and more densely clothed with scales than the Cornish specimens. Mr. Adkin also exhibited a male and female specimen of a *Tortrix* bred from larvæ, found feeding amoug the needles of a shoot of Scotch fir that he had received from Tuam, Co. Galway, and which had been described and figured from specimens reared in 1890 under the name of *Tortrix donelana*, by Mr. G. H. Carpenter (Scien. Proc. R. Dublin Soc., Vol. VII, pl. 2), and read notes, in the course of which he mentioned that the imago appeared to bear a strong resemblance to *T. viburnana*, and the larvæ were very similar. Mr. C. G. Barrett also exhibited specimens of this *Tortrix* and of *T. viburnana*, and remarked that in his opinion the so-called *donelana* were small specimens of *T. viburnana* which had been caused by the peculiar nature of the food-plant. Mr. Tutt said he considered them to be *Tortrtx steineriana*, var. *dohriana*, of which had received a series from Herr Hoffman. Mr. Frohawk, an example of the Fork-tailed Petrel *(Oceanodroma lencorrhoa)* found in Co. Clare after a heavy gale. Mr. Filer, a Mongolian crab which was not identified.

October 22nd.—The President in the chair. This was a special meeting for the purpose of considering the amendments to the new Bye-laws proposed by the Council Among the more important amendments was one to change the name of the Society to the London Natural History Society, the reason being that although founded as a local Society it could not now be said to be such, as, out of close upon 250 members not quite 100 could be described as South London men. This was opposed, as the Society was well known by its present name and the change might not be desirable, and the amendment was lost. The Council having proposed alterations as to the mode of nominating and electing officers, Mr. Turner proposed an amendment which was supported by Messrs. Tutt, Hodges, Fenn, and others, the drift of their remarks being, that if the Council's suggestions were adopted it would become a close body. Messrs. Adkin, Carrington, Hall, and others spoke against the amendment to the effect that this statement was entirely misleading, as, what the Council proposed was usual in all other scientific societies and would simply give power to nominate officers for the ensuing year and so ensure sufficient nominations. Members would still have the right to make further nominations and all officers would have to be elected, two ordinary members of the Council not being eligible for re-election for twelve months. The amendment was not carried. The adoption of the Bye-laws was moved by Mr. Barrett, and carried, and the meeting closed with votes of thanks to Mr. Barrett for introducing, and to Mr. Briggs for drafting them.—H. W. Barker, *Hon. Sec.*

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

October 1st.—Exhibits: Mr. Mead, *Deilephila euphorbiæ* bred from larvæ taken on the banks of the Scheldt., also a long series of *Noctua festiva* from Scotland. Mr. Battley, light and dark forms of *Acronycta psi* from various districts, a pale variety of *Cidaria corylata* from Epping, a partly silvery specimen of *Polyommatus phlæas*, and a female of *Lycæna alexis* with light spots on the tips of the wings, both from Benfleet. Dr. Buckell all exhibited a very variable series of this species from York. and some indistinctly marked specimens from Aberdeen, also living larvæ of *Acidalia immutata*, bred from eggs deposited by moths taken at Leigh. Mr. Tutt, two specimens of *Hadena satura* from Wicken, and one from Aberdeen, also for comparison, *H. adusta* from various localities. He pointed out that although the upper wings of these two species were much alike, *satura* invariably had the hind wings darker than *adusta*. Mr. Clark exhibited *Arctia menthastri* from the north of Ireland, the specimens being much more buff in colour than the south of England form. Mr. Bayne, a series of

Cirrhœdia xerampelina from Aylesbury, and a specimen *Ennomos erosaria* from Epping Forest. Mr. Prout, various specimens showing asymmetrical markings or malformations, including *Xanthia silago, Arctia lubricipeda, Noctua xanthographa, Triphæna orbona*, and *Lomaspilis marginata*. Mr. Milton, a bred series of *Plusia chrysitis;* also, in Coleoptera, *Byrrhuss pilulæ* and *Hypera rumicis.* Mr. Heasler, specimens of *Cis bilamellatus* taken in fungus at Mitcham last February. He also mentioned that he had seen an albino specimen of the sparrow at Westminster.

October 15*th*.—Exhibits: Mr. Boden, a series of *Hesperia lineola* taken near Strood, in September, and a dark specimen of *Melanargia galathea;* he also showed the specimen of a noctua, previously exhibited, bred from a tomato, on August 6th. This insect had since been identified as *Prodrenia littoralis* (Boisduval) a species hitherto unknown in Britain. He stated that he had failed to obtain any information as to the locality from which the tomato came, but expressed an opinion that seeing how extensively this fruit was now cultivated in England, it was quite possible that the insect might become naturalized in this country. The larva was brown, with a pig-like head, and fed on the interior of the tomato during the night, resting during during the day, in a straight posture outside the fruit. The cocoon, which he also exhibited, was formed just under the surface of the sand, at the bottom of the garden-pot in which the insect had been bred. Dr. Sequeira, *Zanthia silago, Epione apiciaria, Scotosia dubitata, Emmelesia affinitata, Cidaria silaceata*, a very small specimen of *Abraxas grossulariata*, and many others. Mr. Quail, life histories of *Eurymene dolabraria* and *Pericallia syringaria*, also a specimen of *Polyommatus virgaureæ*, taken on a thistle head at Birling Gap, near Seaford, 4th August, 1891. The specimen was a male, in good condition, being however, slightly worn, and appearing to have been on the wing for some days. Mr. Clark a series of *Dianthœcia capsincola* from the north of Ireland; also specimens of *Noctua festiva* and *N. conflua* from various localities. Mr. Southey, *Noctua rubi, N. festiva* and *N. triangulum*, with preserved larvæ of each. Dr. Buckell, *Noctua festiva* from London district and York, and so-called var. *conflua* from Aberdeen, *N. sobrina* from Perth, *N. augur* from Highgate, and *N. rubi* from Suffolk and Muswell Hill. Amongst the latter was a specimen in which the area between the transverse line just beyond the reniform and the hind margin was unusually dark. There was also a dark shade at the base, and the black dot under the orbicular had become expanded into a longitudinal dash. Mr. Hill, a living larva of *Notodonta dictæoides* from Epping Forest. Mr. Prout, various species from Sandown, Isle of Wight, including *Satyrus hyperanthus* var. *arate, Agrotis lunigera.* Messrs. Tutt, Bayne, Milton, and Battley also exhibited their series of the genus *Noctua*, and Mr. Horne, of Aberdeen, sent a very variable series of *N. festiva* from his district.

Coleoptera:—Mr. Cripps, *Silpha lævigata, Quedius tristis, Q. molochinus, Ilibius fuliginosus* and *Agabus guttabus.* Mr. Heasler, *Quedius umbrinus*, taken among reed refuse on the banks of Barking Creek. Mr. Milton, *Cryptocephalus aureolus, Philonthus fucicola, Aepus marinus* and *A. roboni.*

Mr. Tutt, in opening the discussion on the genus *Noctua*, said that *N. fennica* and *N. subrosea* were, in his opinion, wrongly placed, and should be removed from our restricted genus *Noctua* to the genus *Agrotis*, to which they were closely related, both structurally and in their variations. *N. augur*, also, was not a true *Noctua*, and would be better if placed in a genus by itself. *Glareosa* and *depuncta* were closely allied, as, notwithstanding the difference in colour, of the British specimens, the Scandinavian *depuncta* were grey. and closely resembled *glareosa*. The next group included *C.-nigrum*, *triangulum*, *rhomboidea*, *brunnea* and *ditrapezium*, all of which had a square dark blotch between the reniform and orbicular, and another more or less triangular spot between the orbicular and the root of the wing, these two spots being sometimes joined by a dark line passing beneath the orbicular. *Tæniocampa gothica* also had these markings stongly developed, and thus, although a true *Tæniocampa*, assumed the superficial appearance of a typical *Noctua*. *Festiva* and *conflua* were originally confounded by Newman, who figured small, moorland specimens of *festiva* as *conflua*, but the specimens of *conflua* from Iceland, from which the species was named, were very different, having narrowerer and more pointed wings. This form occurred in the Shetland Isles, but hitherto, he had not received any authentic reports of its capture on the mainland of Britain, the species usually sent out as var. *conflua* being the small specimen of *festiva*.

Messrs. Clark, Milton, Southey and Dr. Buckell continued the discussion, the latter remarking that the reniform of *N. augur* was different in shape to that of the other species of the genus. A vote of thanks to Mr. Tutt concluded the meeting.—G. A. Lewcock and A. U. Battley, *Hon. Secs.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.

October 12*th*.—The Vice-President, Rev. H. H. Higgins, in the chair. Mr. C. E. Stott read a paper entitled "Notes on *Celæna Haworthii*," (which will shortly appear in our columns, *Ed.*) Mr. J. Collins read "A few remarks on *Aplecta nebulosa*," and exhibited five specimens of a melanic form, bred from larvæ found at Delamere, and for which he proposed the varietal name of *Robsoni*, in honour of Mr. J. E. Robson, of Hartlepool. He described the variety as follows:—"Anterior wings, ground colour, dark grey-black, orbicular and reniform stigmata more or less obscured with dark grey; a grey shade preceeding the subterminal lines; fringes, pale greyish white. Posterior wings, dark grey, lunule inperceptible. Head, thorax, and body like the hind wings, dark grey; thoracic lobes, pale grey.

The Secretary read a communication from Mr. Tutt stating that the specimens of *Tortrix donelana* exhibited at the last meeting, had, at the South London Entomological Society, been stated to be *T. steineriana*, var. *dohrniana*, and that the name of *donelana* would therefore fall to the ground. It was pointed out that *doneland* had already been referred to *steineriana*, but incorrectly. Mr. Townsing showed a remarkable gynahdionurphons specimen of *Orygia antigua*, the head of which possessed the male structure, whilst the body was that of the female. Mr. Harker a specimen of *Vanessaio*, the ground colour of which was fulvous brown, apparently owing to the pancity of the scales. Mr. Gregson a very variable series of *Dianthœcia conspersa*, including the melanic form. Messrs. Townsing and Prince, dark forms of *Abraxas gsossulariata*, and Mr. Pierce (the Secretary), *Retinia resinana*, and their resinous nodules from fir-trees.—J. N. Pierce, *Hon. Sec.*

INSECTA.—COLEOPTERA.

THE COLEOPTEREST IN DELAMERE FOREST.*

BY W. E. SHARP.

> "O qui me in vallibus Hœmi
> Sistat, et ingenti ramorum protegat umbra."—*Geo. II.*

Eastwards from Chester Cross, under the low arch of the Eastgate, one comes out upon the old Watling Street, that great military way which the Roman engineers stretched from London to Chester, and which can still be traced in shreds and fragments, in old world name of farm or meadow, or in actual macadamized highway—the great north-western artery of the Roman conquest. And if you in fancy follow the legionaries as they file through the Eastgate and form up outside, and with that measured tread of theirs, tramp along the very road our footsteps follow to-day, straight as a line it leads past Broughton,and over the little river Gowey,and away by the flat marshy meadows through the modern Tarven, then probably a district half swamp and half forest, we come to the outlying hills of a low range, which drops drops down from Runcorn aud Frodsham and are now called Overton. Straight up the hill went the road, for those roadmakers disdained the the long curve round the base of the hills which modern usage has found more convenient, up over the hills and then through a desolate tract, probably one of the wildest and dreariest which that company would that Company would traverse between Deva and Thames – now an intermittant forest of oaks and pine and birch, here and there patches of cultivated land and wastes of heath and bog—this is the forest of Delamere, Mara of old ; this hill whence we survey the scene is the hill Eddisbury, and these crumbling stones beneath our feet are the only vestiges of that old city which the Saxon built in the Watling Street long centuries after the Roman name and the Roman power had faded to a dim tradition. But to-day, in this bright morning in early June the forest of Delamere is a fair spot enough in the violet haze of its pine woods and the gold of the young foliage of its oaks—and, dismissing from our minds the dark memories of those who were before us in this place, we wake up to the fact that our present nineteenth century object is to make ourselves acquainted with the Coleopterous denizens of these glades, to feel the pleasure of the pathless woods, and to enjoy a summer holiday.

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*This paper must not be understood as anything like an exhaustive list of Coleoptera of Delamere forest. It merely recapitulates the species actually taken there on one day during last summer.

Delamere has not always been a forest as we find it now, three centuries ago it formed part of the great woodlands that occupied all west Cheshire, and owed to the Abbot of St. Werburg, in Chester a stag and six bucks yearly, but by the beginning of this century it had been disforested and was a boggy waste of heather something similar to the present Chat Moss. More recently still, fifty or sixty years ago, the greater part was planted with oaks and the swampy bottoms were drained, and there the survivors of the original firs and birches managed to struggle again into life and renew the semblance of the Delamere of Plantagenet times. But long ago, before the dawn of history, this whole tract must have formed some kind of tidal estuary, some great river must have washed the flanks of Eddisbury, for all the forest is grown on beds of ancient river gravel or sea shingle, and deposits of sand. What was the exact configuration of the land at that time is difficult now to make out, nor is it our immediate province to discover, but the bare sides of the surrounding hills afford those unmistakeable sign of terraces of banked up sand and water-worn gravel. This poor sandy soil renders the land very unsuitable for cultivation, and has perhaps saved our forest from the fate of many a woodland grown on more remunerative land. A splendid piece of wild rough country it is, however, wherein we can range at will, it being nearly all Crown property and innocent of game or game-keepers. Here the ornithologist, the botanist, and the entomologist find a happy hunting ground. In the tops of these oaks the persecuted magpie builds her thorny dome, and in the remoter glades the jay and the sparrow-hawk have found a refuge. If you are a lepidopterist, not to speak of nocturnal sugarings and abundant spoil, you may net the Fritillary *Euphrosyne* in the clearings near the meres, and in the rough bramble hedges *Thecla rubi* is often abundant.

But the coleopterous fauna of the forest is all unknown, let it, therefore, on this occasion, be our care. Yonder sinuous sheet of water flashing in the morning sun is Oakmere, and we cannot do better than make our way straight towards it. Between it and us lies a low wet part of the forest, and deep ditches drain what would otherwise be an impassable swamp. Pausing for a moment before leaping one of these dykes, we notice, motionless in the brown wet surface of the peat, a shining bronze brown beetle, in a second it is off, as quickly we intercept its course. This turns out to be *Elaphrus cupreus* and we capture quite a series by intently watching the wet peat. They are generally invisible, being coloured so exactly like their environment, but their agile movements betray them and lead to heir untimely doom. Among them are some specimens very similar but rather smaller, this is *E. riparius*, and they are far less numerous than the others. Here we think, should be the spot for *Carabus nitens*, calling to mind the accounts of that insect's lucky capturer on Chat Moss, but we look for our resplendent Carab in vain; *Notiophilus palustris* is common however, but is hardly a consoling substitute. Trying the sluggish waters of the ditch, the net brings up several specimens of *Hydrophorus melanocephalus*, *H. erythrocephalus*, and *H. planus*, and me or two *H. Gyllenhalii* but little else, so relinquishing the net, we pass on our way through the birches and the firs, and emerge presently into one of those long straight rides which are cut at intervals through the forest, rarely used by any wayfarer; the track is deep with ling and heather and clumps of whinberry, the sides of the low ditches which line the path are festooned with the long fronds of the Blechnum fern, and their hollows yellow with kingcups. On either side stand the dark walls of the pines, redolent in the warm summer air; and far down in the utmost recesses comes the sleepy fitful murmur of the wood pigeons, now and then broken by the sudden cackle of a jay, and anon you see the streak of white and and russet flash across the gap between the trees, which denotes that shy but garrulous bird. Here in the summer twilight you will see the mysterious goatsuckers flitting silently, bat-like, in and out from the fir trees, or note the cry of the horned owls break the silence of the swampy bottoms. But as we pass along through the heather and the whinberries, more intent on the insect denizens of the place, we notice some pink and white fungi growing just within the wood and in the gills of these we find some specimens of *Cychramus fungicola*, some others, more decayed, swarm with *Autalia impressa*, *Bolitophagus pygmæus*, and *Homalia* of two or three species, besides a couple of *Cholevæ* and a number of *Homalota fungicola* and *Cryptophagus pilosus*. After this, we try beating the lower branches of the fir trees and secure *Cyphon padi* and a profusion of *Coccinellæ*, there is *Coccinella variabilis*, hardly two of which are alike, there is also *C. hieroglyphica*, *C. 18-guttata*, *C. oblongoguttata* and *C. bipunctata.* We also take several *Elater balteatus* and a couple of *E. pomorum.* So keeping along this forest track we gradually approach Oakmere, a narrow winding water, perhaps a mile or so long. The country immediately round it is cleared of trees, but a zone of swamp fringes its shores and renders access to its waters a matter of difficulty. Here, on the dryer spots, the scented bog myrtle grows, and great tufts of whinberry and the tall *Lastrea* fern, and between are holes of peat and deep brown water, into which, as you leap from one tussock to another, you may see the ringed snake slip – they abound in this swamp, and, if report can be trusted, there are also adders. Here in July you will take the Marsh ringlet, var. *Rothliebii*, quite commonly. The mere itself is unworkable on this side for *Hydradephaga*, but these boggy pools yield some sport. The best things turn out to be *Colymbetes bistriatus* and *Hydrophorus parallelogrammus.* Besides these, however, we took *H. memnonius*, *H. assimilis*, *H. nigrita*, *H. lituratus*, *H. obscurus*, *H. Gyllenhali*, *H. planus*, and *erythrocephalus*, *Philhydrus marginellus*, and other common things. The water, however, was thick and muddy, and it was not easy to capture its coleopterous denizens. Another use we put it to: a few cows it seemed picked up a scanty living on this moss, and by submerging their droppings we took *Aphodius hæmorrhoidalis*, *A. depressus*, *A. fossor*, and *A. ater*, in great numbers, likewise common Staphs inumerable and Cercyona.

A little later in the year, as you pick your careful way through this swamp, a great yellow moth will suddenly start up and dash away. If you can manage to net the thing, you will find you have *Euthemonia russula.* The geometer *Fidonia atomaria* also will be very common - we disturb one or two now, indeed, as we pass, and on dull days we have taken *Euphrosyne* at rest on the reeds.

Passing round the head of Oakmere, we get up into the pine woods at the other side, and notice *Fidonia piniaria* fresh out, aimlessly fluttering about the tree stems, the two sexes of which insect are so unlike as to persuade the tyro that he has two different species of moth. Here, some of the firs have been recently felled, and their stems littered round with chips show white and shining here and there.

These we proceed to examine, turn over the chips and loose fragments of bark, we soon turn out *Ips 4-punctata.* Then there are some little thin flat beetles which appear dead, they are the *Rhizophagi* ; *R. dispar* is the commonest, but we also get *R. ferrugineus* and one specimen which we hope may turn out to be *politus.* *Ips ferrugineus* is also of the company. Then, laying bare more of the bark, we find *Hylastes ater* and *Hylurgus piniperda* and an odd specimen of *Hylastes palliatus.* Also, esconsed in some deeper chinks, *Hylobius abietis.* A very tiny staph, which seems to live under the bark, turns out to be *Homalium pusillum.* In the dead twigs of last year's felling, we find the curious little *Xylocleptes bispinus.* Many other *Xylophagus* species might be got from these stumps, but as we want to make our collecting as varied as possible we arise and push on to where we can see the deep indigo blue recesses of the pine wood, broken by the light green of oak and birch. Here the forest is more light and airy, the fern is not yet out, but the thin grey crozier-like stalks are piercing the brown last year's leaves in every direction, and if we cut them through near the root we shall see King Charles already in his oak tree ; where the sun breaks through are patches of hyacinth and scattered wood anemone. Here we commence a sustematic beating of the oaks. The most frequent Coleopteron seems to be *Attelabus curculionoides*, which every stroke brings down into the net; but we also get *Orchestes quercus* and *O. avellanæ*, *Ceuthorhynchidius troglodytes*, *Cœliodes rubicundus*, *Phyllobius argentatus*, *P. oblongus*, and *P. calcaratus* *Coccinella variabilis* seems to be as common on the oaks as on the fir. An unexpected capture is *Silpha 4-punctata*, beaten from an oak. Among the Sternoxi are, of course, *Athous hæmorrhoidalis*, *Agriotes sputator*, *A. lineatus*, and *A. pallidulus* and *Dolopius marginatus*, also a few of the very variable *Campylus linearis*, *Cyphon variabis*, and plenty of common *Telephori.* But among the Phytophaga we get very little it being probably too early in the year for the most of them; the only species are *Gastrophysa polygoni* and *Phratora vittellinæ* from some willows. The Rhyncophora are greatly to the front, and especially the genera *Phyllobius*, *Otiorhynchus*, and *Strophosomus.*

Thus we wander on through the pleasant oak woods, steering by compass for there is no beaten track. An occasional hawthorn, laden with blossom, gives the common *Meligethes rufipes* and *M. æneus*, and also *M. erythropus*, *Epurea æstiva*, *Anaspis frontalis* and *A.*

melanopa, and *Anthobium torquatum*. From beneath the bark of a fallen tree we get *Baptolinus alternans*, and under it *Calathus piceus* and *Philonthus decorus;* and from dead leaves and twigs shaken out over a sheet of paper, were taken *Megarthrus depressus* and *M. denticollis*, *Lathrimæum unicolor*, *Xantholinus ochraceus*, *Falagria sulcatula*, and several other common *Staphs* and minute species of *Atomaria*.

There are but few stones, and among the Geodephaga we can only find here besides *Calathus piceus*, *No. biguttatus* in immense abundance, *Carabus catenulatus* and *Metabletus foveola*. Soon afterwards, as we resume our march, we can feel rather than see that the ground is rising, the oaks begin to give place to birches, these gradually thin out, and we emerge on the top of a hill, bare and grassy. From this vantage point we can see the forest sweep away on every side, far to the South is the long flat stretch of the vale Royal and that steep rock rising from the blue mist being, as it were, between earth and heaven, is Beeston, with its ruined castle. The hills of Flintshire are on the Western horizon, but Eastwards all is forest land as far as eye can see. The sun is lowering to those Welsh hills as we drop down the other side of the hill. We beat some scattered broom in hopes of *Libioe*, but only get some *Sitones regensteinensis* and *S. tibealis*, and several *Apiona*, such as *A. striatum*, *A. simile*, &c.

Along the road homeward we are surprised to take in a sandy waste place, under stones, several *Amara fulva*,* which we imagined to be an exclusively maritime species. *Bradycellus cognatus* and *B. verbasci*, and some common *Pterostichi* and *Amaræ* closed the day's collecting. We have our bottles fairly well filled, as a beginner we have added several new species to our collection, and provided in their determination, occupation for many winter evenings—and at moments on many morrows, in the midst of city life, we shall again hear the shrill chatter of the jays and catch once again the warm resinous perfume of the pines of Delamere.

Lidsham, Cheshire.

Notes.

Captures of Coleoptera.—On the 16th of June, the Botanical and Entomological members of the Hampshire Field Club had a good

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,*I have taken *Amara fulva* inland, at Aldershot, (Hants), Farnham, (Surrey), and also at Esher, (Surrey), but only one or two on each occasion; these were in gravel pits.—G.A.L.

day at Mothsfont, near Ramsey. The Rev. H. S. Gotham, of Shirley, was of the number, and his company was greatly appreciated by the coleopterists. Several species of *Donacia* were taken, including *sericea*, (of most shades of colour), *semicuprea*, and *affinis* in abundance. Four or five specimens of *Cryptocephalus aureolus* were swept up, and Mr. Gortham also took *Orchetes saliceti*, *Anthobium minutum*, *Rhinoncus denticollis*, and *Ceuthorhynchidius melanarius*.

ANOPLODERA SEXGUTTATA.—I took one specimen of this nice Longicorn at Brockenhurst, 4th July.—R. BECK.

DONACIA CRASSIPES.—I took several fine specimens at Christchurch on 24th June.—ID.

DONACIA DENTATA.—This insect I also took in abundance on 21st July; they appeared to have but recently emerged.[*]—ID.

LIXUS PARAPLECTICUS.—Whilst on the look out for Donaciæ on 24th June, I took the opportunity of examining some large clumps of *Sium angustifolium* (Water Parsnip) growing in the Stour, near Christchurch, and was successful in securing two specimens. On the 1st July I captured five more (three in very fine condition). The thorax and elytra of this insect are sprinkled with a testaceous powder which very easily rubs off, but by carefully boxing them with a piece of *Sium* to cling to, I have succeeded in preserving them in fine condition.[†]—ID.

LEPTURA SANGUINEOLENTA.—I was very fortunate in securing a fine female specimen of this rare beetle whilst sweeping in my garden, amongst umbelliferæ, late one evening in June this year. The elytra are very deep red, legs black.—ID.

PACHYTA OCTOMACULATA, F.—Whilst walking by a brook with some friends, one day, I found a specimen of *Pachyta octomaculata* at rest on the flowers of *Heracleum sphondylium*. I was glad of this insect as previously I had but a single specimen, which was sent me from this place (Ashbrittle, Wellington, Somersetshire), by my brother. On proceeding a little further; and two or three days afterwards I saw several flying along a sunny bank—probably for pairing purposes, there being but few flowers near the spots. Their long hind legs were held together whilst on the wing, and in appearance somewhat resembled the long ovipositor of an ichneumon; owing to this circumstance, and their antennæ, I at first mistook them for one of those insects. A second glance, however, convinced me of my error. Being rather pressed for time, I was only able to capture ten specimens. The following week I visited a place called Craddock, near Collumpton, Devon, (about ten miles from Ashbrittle), and found them fairly common on the Umbelliferæ—more especially the species already mentioned. Nine out of ten of those on flowers were males; whilst those captured on the wing, at Ashbrittle, were mostly females.—F. Milton, 164 Stamford Hill, London, N.

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[*] This species, and *Donacia bidens*, may be captured throughout the entire month of August; but I have takeu *D. bidens* as late as Sept. 24th, (1889), at Walthamstow, among *Potamogeton;* also at Esher, on same plant, Sept. 29th, 1883.—G.A.L.

[†] The fine specimen kindly sent me by Mr. Beck bears ample testimony to his carefulness in preserving this insect in splendid condition.—G.A.L.

Irish Coleoptera.—On the 11th of May last, I took a specimen of *Cychrus rostratus* in a pine wood on Killakee Mountain, Co. Dublin, under a large stone half sunk in pine needles, etc. This is, I believe, the first record of the beetle from this part of Ireland. A specimen I took in the South, made a faint stridulating noise when captured, which habit has, I think, been noticed by other coleopterists. On the same date a considerable number of specimens of *Silpha atrata*, var. *subrotunda* were noticed, but I have never got a specimen of the *S. atrata* itself in Dublin, where it appears to be extremely rare. I again took *Helops striatus*[*] in dead wood. I have not come across any cockchafers this year, and the coldness of the season may have retarded them.—J. Montgomery Browne, Dublin, June 11th, 1891.

Irish Coleoptera.—On page 157, paragraph relating to *Serica brunnea*, the locality should be "Bundoran,,' not "Bundora." On page 158, for *Bembiduim* read *Bembidium*. Also on same page, for "Killarney" read "Killiney."

Telephorus translucidus.—This uncommon species has again been taken in the "London district." Some half-dozen specimens have been taken at Longton, in July, by myself and Mr. Heasller. Mr. E. A. Newbery and Rev. J. Isabell also captured it at Highgate.—G. A. Lewcock.

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[*] *Helops striatus* is very abundant in the pine needles at foot of trees, and elsewhere, at Esher during winter months.—G.A.L.

NOTES FOR BEGINNERS.—MICRO LARVÆ FOR THE MONTH.

BY GEO. ELISHA, F.E.S.

The year is getting on apace, and towards the end of November the collecting of those larvæ feeding in folded leaves, or mining them, or on the seeds of plants is drawing to a close, and although we occasionally come across many larvæ at this time just beginning to feed, they all hibernate, so had better be left till the winter is over, when they again commence operations, for at that time the herbage is low, and the work of the larvæ easily detected, the probability is, we shall then rear every larva we may find.

This is the best month to take the larva of *L. lantanella*; they mine the leaves of the wayfaring tree *(Viburnam lantana)* forming large bladdery like mines, and although full grown this month they do not change to the pupa till the following spring; they are easily reared by putting the mined leaves ln a flower pot and keeping in a cool place: the leaves of the nut one cannot help noticing at this time, for the gallery like mines of the larva of *Nep. microtheriella* and *floslactella* are very conspicuous, as many as twenty to thirty larvæ of the former are often found in one leaf, and a few of the latter also, the coccoon of *floslactella* is white, and that of *microtheriella* light brown, and a singular fact in connection with these last is, they appear to like company when spinning their coccoons, for although there are plenty of leaves in the cage, they congregate in clusters, as many as twenty-six coccoons all close together between two leaves will often be found and dozens of leaves with not a single coccoon.

The shady banks of the margins of woods must now be examined for the bush vetch *(Vicia sepium)* which although generally low growing, is occasionally found creeping up between the bushes in hedges two or three feet, and securely fastening itself by means of its delicate tendrils; its leaves at this time are being mined by the larvæ of *L. bremiella*, they mine the entire leaflet, and some may be found apparently just commencing to mine to quite the end of the month. The leaves of the young oaks, seven or eight inches high, are still being mined by the larvæ of *L. lautella*, and the gallery like mines of the larva of *N. quinquella* will be observed in the leaves of the larger trees, and mining the leaves of the honeysuckle, the larvæ of *L. emberizapennelle* and *trifasciella* may be found to about the middle of the month.

In rough places such as old disused brick-fields, that have been idle for years, the water plantain (*Alisma plantago*) will be found growing at the sides of the shallow ponds and pools that are always to be found in this sort of broken ground, the flower stems are at this time quite bare, the whorled branches alone are the only character now to denote what they are, by cutting the stems close to the root and splitting some of them open we shall probably find the whitish larva of *E. udana*, which when full grown pupate within the stems, we must take a good supply of these stems, selecting only those that have small holes here and there in the sides, for it is these only that contain larvæ, tie them in a bundle, and keep them out in all weathers during the winter and to near the time of emergence, when they must be put into a cage, in due time a fine series is almost sure to be bred. While taking these stems, a search should be made of the common thistles growing so plentifully in these places, for the whitish cases of *Col. therinella* will now be found firmly fixed to the stems, the cases must not be disturbed, the thistle stems must be cut and taken with them.

On chalky slopes the carline thistle *(Carlina vulgaris)* will be found growing pretty commonly in some places, the heads of which must now be examined, for some of them contain the larva of *P. carlinella*, which will be found at the bottom of the seed head, eating through the seeds, and on the same slopes the vipers bugloss *(Echium vulgaris)* is almost sure to be found; the dead stems must be cut open, when some of them will be found to contain numbers of very small larvæ making long galleries up and down the dry flower stems, these would be the larvæ of *D. ocnerostomella*; a few stems only need be taken, for dozens of moths will emerge from them. The larvæ of *P. lapella* is still to be found in the seed heads of Burdock, and in the stems of wild parsnip *(Pastinaca sylvestris)* the larva of *C. dilucidana* will be found near the joints; the larva also of *C. francillana* may be taken this month, feeding in the stems of the wild carrot, and the larva of *A. Lephyrana* near the crown of the roots; and in the stems of tall Scotch and other thistles, growing in sandy soils, by the side of ditches, or in waste places, the larva of *M. cribella* may easily be found, the heaps of light sawdust looking stuff exuding from holes in the sides of the stems tells us the larvæ are at work within.

The season is now drawing to a close, and although we may take many of the above during the next two or three months, it is as well to get them as soon as possible, for most of the stems get broken off and scattered by the gales of wind we get occasionally through the winter months.

Shepherdess Walk, London, N.

Notes.

SPHINX CONVOLVULI IN ABERDEENSHIRE.—My sister captured a fine male *S. convolvuli* on the 12th September, while it was hovering over honeysuckle flowers, at dusk.—WM. REID, Pitcaple.

SPHINX CONVOLVULI AT HARTLEPOOL.—A fair specimen was caught on the sea wall here, and brought me on October 19th. I have also heard of other two being taken in the town.—JOHN E. ROBSON, Hartlepool.

YPIPSIPETES RUBERATA IN ABERDEENSHIRE.—Several years ago a few specimens of the above were said to have been taken near Aberdeen, but as it was never seen again, (although there is a large staff of entomologists resident in the city), it was thought by many that the few taken had been recorded in error, or that they were only "escapes" from someone's breeding cage. I have now been able to dissipate this idea, having quite recently found *ruberata* in several localities near home, and have also discovered the larvæ feeding on sallow. I expect it will be found to be sparingly, but widely distributed over the whole County.—WM. REID, Pitcaple, N.B.

ACRONYCTA ACERIS.—I see that I was indeed so unfortunate as to miss Dr. Buckell's reference to *Cuspidia aceris* in the Ent. Rec., Vol. I, p. 130. This being the first appearance of the name (*i.e. Cuspidia aceris*, not *Cuspidia*, Chapm., or *aceris*, L.), it should be quoted in synonymic lists, &c., when precision is required, as *Cuspidia aceris*, (L.) Buckell—that is, unless Dr. Buckell repudiates the authorship of the name, and can show that the editor altered his MS. I can well imagine how needless all this must seem to most of those who read this note; and, of course, in the ordinary way, and in the catalogues intended only to be used as check-lists, we are usually satisfied to write *aceris*, L., whatever genus we place it in. But the method I advocate is the only one which is strictly accurate, and it is followed in the more elaborate catalogues, (*i.e.* the recently published list of British Fossil Vertebrata). The majority of Botanists even decline to recognise any other as author than he who first published the double name, *i.e.* the genus and species together. If the discussion that has taken place has made these things clear, it will have done good.—T. D. A. Cockerell, Jamaica, Sept. 5th, 1891.

The above note may make Mr. Cockerell's position perfectly clear; but for our part we protest in the strongest manner against any attempt still further to complicate and alter the already bewildering nomenclature of our Lepidoptera. We desire to see it simplified and permanent. Under the binomial system an insect would be known by its generic and specific name, as, *Acronycta aceris*—neither *Acronycta aceris*, Linn, (because Ochsenheimer introduced the generic term *Acronycta*), nor yet *Cuspidia aceris*, Buckell; for whatever may be the ultimate decision as to the authority for *Cuspidia*, Dr. Buckell did not introduce the specific name *aceris*. In a synonymic catalogue they would stand correctly enough—thus,

Acronycta, Ochs.
aceris, Linn.,

but that is for reference, not for ordinary use.—Ed. B.N.

Plusia Moneta at Cambridge.—A fine specimen of this beautiful species was taken in August, 1890, by Mr. J. C. Rickard, at rest, just outside his house in Downing Terrace, Cambridge.

Will the species succeed in naturalizing itself here? And, if so, what change of circumstances has induced it so to do?—A. F. Griffith, Brighton, October 12th, 1891.

THE PTEROPHORINA OF BRITAIN,

BY J. W. TUTT, F.E.S.

(Continued from page 209.)

O. parvidactyla, Haw.—This pretty little insect is generally supposed to be one of our commonest species, and on the chalk hills of our South-Eastern Counties perhaps is, but its economy is not at all well known, and a satisfactory description of the larva is still a desideratum. The larva has never been reared in England.

SYNONYMY.—*Parvidactyla*, Haw. "Lep. Brit.," p. 480 *Parvidactylus*, Wocke, "Cat.," p. 343; Sta. "Man," II., p. 441. *Microdactylus*, St. "Ill.," IV., 377; Wood, 1652. *Obscurus* Z., "Isis," 1841, 793, Pl. IV., 25-6, "Linn. Ent.," VI., 354; Dup. IV., 88, 11; Tgstr. Bidr. 155, Anm. 199; H.-S. 17, V., p. 372; Frey 410.

This species was uniformly known as *obscurus* on the Continent, prior to the publication of Drs. Staudinger and Wocke's "Catalog," since then, Haworth's prior name has been generally adopted.

IMAGO.—The anterior wings are divided into two lobes, and have the tips of the lobes somewhat acute. The colour is dark brown and there are two, almost white, narrow, clearly defined fasciæ across the lobes, the hind wings are composed of three plumules also dark brown, the black tuft on the third plumule being large and well-defined and situate near the tip.

Haworth's diagnosis of this species is as follows:—"*Alucita* (the small plume) nana, alis patentibus fuscis, striga punctisque albis: anticis bifidis, posticis tripartitis. Expansio alarum 6-6½ lin." Haworth then adds:—"This is the smallest of the 'Plume' moths; and it is also one of the rarest. Its characters are almost the same as in the two preceding articles *(didactyla = distans)* and *heterodactyla)*, yet its diminutive size, as a species, renders it very distinct." ("Lepidoptera Britannica," p. 480. Stainton's diagnosis is:—"7'''. F.-w. brownish, with two white streaks across the lobes; third feather of h.-w. with a black tuft nearly at the tip" ("Manual," II., p. 441). Comparing it with the allied species, Mr. C. G. Barrett writes;—"*Parvidactyla* is considerably smaller, of the colour of *pilosellæ*, and with oblique fasciæ, but these are narrow, bright, and sharply defined; the costal margin is much less arched, though hardly so blunt as the *hieracii*. The dark tuft on the third feather of hind-wing is large, and placed nearly at the tip." ("Entomologist's Monthly Magazine," Vol. XXV., p. 431).

LARVA.—Stainton writes—"The larva on *Hieracium pilosella* in May" ("Manual," II., p. 441), but Mr. C. Barrett writes:—"I do not think that *O. parvidactyla* has anything to do with *H. pilosella*" (*in litt*). Dr. Jordan, however, mentions *H. pilosella* as its food plant in the "Entomologist's Monthly Magazine," Vol. VI., p. 151. Mr. South writes:—"The larva feeds on thyme, but it is rather slow work searching for this little fellow," ("Entomologist," Vol. XIV.

p. 50). From this it might be assumedthat Mr. South knew the larva, but it is one of those he does not describe later on in his "Contributions"; and he falls back on Frey's description of the larva: "The ground colour of the larva is dirty pale green, on each segment are four black warts, bearing a star-shaped tuft of bristles; head and dorsal plate blackish, the latter divided by a pale line," and further states, apparently on the same authority:—"The larva feeds in April on the young leaves of *Stachys alpina*; in Autumn on the heads of *Marrubium*." ("Entomologist," XXII., p. 34). I have generally taken it among *Thymus serphyllum*, but the latter plant is generally abundant in all the chalky localities frequented in England by this insect, and there may be no real connection between the two. The late Professor Zeller records as follows:—"On the 19th of June, (1869), near Meseritz in Posen, on dry sandy places where *Hieracium pilosella* grows very abundantly, *Pterophorus tristis* was already mostly in bad condition, showing that the first brood was nearly at an end; the *Pterophorus obscurus (parvidactyla)*, which occurred singly amongst them, showed by their freshness that they certainly came out later than *P. tristis*." ("Entomologist's Monthly Magazine," Vol. VI., p. 50.

Time of Appearance.—This species appears to occur continuously from the second week in June until the second week in August, but it is rarely out for more than about six weeks in any one year. In a normal season I have taken it from about the middle of June until the end of July, and this may be looked upon as its ordinary time of appearance, but in 1888 and again in 1890, I captured specimens continuously from about the 11th of June to the 12th of August. In the latter year it was most abundant from August 1st to August 8th, near Dover. Stainton gives "June and July." Professor Zeller, as stated elsewhere, captured it at Meseritz on the 19th of June and 11th of July, in 1869.

Habitat.—The species occurs on the chalk hills in Kent and Surrey, and I have taken it very commonly near Caxton and also near Dover, in Kent; but I have never seen it off chalk. Its time of flight is in the afternoon until dusk, and it wants a sharp eye to detect it rapidly enough to take it in any numbers. Stainton gives as localities:—"Alkham, Bristol, Lewis, Pembury, Scarborough, Charlton and Mickleham." The Rev. O. P. Cambridge also reports:—"One specimen many years ago at Bloxworth" *(in litt.)* whilst Mr. W. F.

de V. Kane records it "from Sligo" *(in litt.)*. So far as I can learn this species is most restricted in its habitat, except on the chalk in the south eastern counties, and far from being a common species, except in its favoured haunts, is much more local than other supposed rarer ones. Under the name of *O. obscurus*, Dr. Jordan records it from Scandinavia, "Entomologist's Monthly Magazine," Vol. VI., p. 122. The late Professor Zeller records it (Entomologist's Monthly Magazine," Vol. VI., pp. 50-54) from near Meseritz in Posen, in dry, sandy places, on the 19th June and 11th July (1869), under the name of *obscurus*. Drs. Standinger and Wocke give the "whole of Europe except the polar region; Hyrcania (North Persia) and Asia Minor" as its limit in the Palæarctic region ("Catalog," p. 343).

Trichoptilus, Wlsm.

It has long been recognised that *paludum* did not belong to the genus *Aciptilia*, Hb., and in 1869, Dr. Jordan wrote:—"*Paludum* certainly does not belong to *Aciptilus*, the much longer palpi and the slightly thickened tibiæ would be quite enough to distinguish it. ("Entomologist's Monthly Magazine," Vol. VI., p. 150), and with regard to the same subject, Dr. Jordan wrote to me:—"With regard to *paludum*, it is clear that this species with *ononides*, *siceliota* and *baptodachtyla* form a little group by themselves. Zeller, in a letter to me, allowed that these might be separated" (*in litt.*), and since Mr. Mayrick has recently separated it with *siceliota*, Zell. from all our "plumes" and included them under the *Trichoptolis* of Walsingham, I have followed the new departure. The genus is thus diagnosed:—"Face without tuft, rounded; ocelli obsolete; tongue developed. Antennæ two-thirds, in ♂ ciliated ($\frac{1}{5}$-$\frac{2}{3}$). Labial palpi moderate, ascending, second joint with short projecting scales beneath, tending to form a short angular apical tuft, terminal joint short or long, filiform, tolerably pointed. Maxillary palpi obsolete. Tibiæ thickened with scales on origin of spurs, outer spurs nearly equal inner. Forewings bifid, cleft from before middle; vein 2 out of 4 or absent, 3 absent, 5 and 6 extremely short, 7 absent, 9 absent, 10 from near 8 or absent, 11 from near 8, long. Hind wings trifid, third segment with more or less developed tooth of black scales in dorsal cilia, often slight; vein 2 from middle of cell, 3 absent, 5 and 6 very short, 7 to apex." ("Trans. Ent. Soc. Lond.," 1890, p. 484). Of this genus

3 NOV 91
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Exchange.—Desiderata.—Land and Fresh Water Mollusca of Britain, in exchange for Land, Fresh Water, and Marine Mollusca of North America. —A. H. Gardner, P.O. Box 62. Pay Ridge. Ms. United States of America.

Desiderata.—Having re-arranged my cabinet I will be glad of specimens of L. sinapis T. rubi, W-album, pruni, N. lucina, A. Iris, V. polychloros, M. cinxia, A. selene, S. ægeria, F tages, H. actæon, sylvanus, comma, S. paniscus, T. apiformis, bembeciformis, S. musciformis cynissiformis, ichneumoniformis, &c. I will make the best return in my power.—John E Robson, Hartlepool.

TO CORRESPONDENTS.

Conchological section.—Mr. Cockerill having sailed for Jamaica, this section is temporaril suspended. Communications in the meantime to be sent to the Editor.

Mr. G. A. Lewcock, 73, Oxford Road, Islington, N., Hon. Sec. City of London Ento and Nat. Hist. Society, represents the Magazine in London, and conducts the section Coleoptera.

CHANGE OF ADDRESS.

Dr Ellis *from* Stoke-on-Trent *to* 18 Rodney Street, Liverpool

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MEETINGS OF SOCIETIES.

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY Albion Hall, London Wall Meetings.—*Thursdays, Nov. 5th* and 19*th*. Fixtures: Nov. 5, The Lepidoptera of a London Garden, Dr. F. J. Buckell. Nov. 19, Dragon Flies, Mr. F. Milton. Dec. 3, Annual General Meeting, Secretary's Report, President's Address, &c. Dec. 17, Pocket Box Exhibition. Jan. 7, The Pterophorina, Mr. J. W. Tutt. Jan. 21, Larva Preserving, Mr. A. Quail. Feb. 4, The Lepidoptera of Epping Forest, Mr. A. F. Bayne. Feb. 18, The Genus Hepialus, Mr. J. E. Robson. Mar. 3, The Coccinellidæ, Mr. G. A. Lewcock. Mar. 17, The Genus Hadena, Mr. J. W. Tutt. Apl. 7, The Life-history of L. Salicis, Mr. A. N. Battley.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge, S.E. *Thursdays, Nov. 12th,* and 26*th*.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY, Free Library, William Brown St., Liverpool. Next Meeting 9th November.

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Meyrick writes:—"A genus of limited extent, but cosmopolitan; more species are known from America than any other region" (*l.c.* p. 485).

T. paludum, Zell.—This, the smallest and most delicate of all our "plume" moths, is comparatively rare and exceedingly local in Britain. The captures of the last few years have been almost entirely confined to Dorsetshire.

Synonymy—*Paludum*, Zell. "Isis," 1841, 866, "Linn. Ent. Zeit.," VI., 400; Sta. "Man." II., p. 445; H.-S. 19, V., p. 382; Wood "Ind. Ent.," 1854, p. 281, pl. 59.

Imago—The imago is described by the Rev. O. P. Cambridge as follows:—"The width of the upper wings, which are cleft at the extremity, through half their length, into two lobes, is 6½ lines. Their colour is greyish brown, tinged with chocolate. Each lobe has one or two oblique white markings. A conspicuous one on the lower lobe is formed by the long white fringe near the extremity on the lower margin; and is brought into relief by a black dash on its inner side. There are also one or two other black dashes, and some black points, formed by minute black scales on these lobes, giving that part a prettily variegated appearance. The lower wings are three-lobed, unicolorous, and destitute of any black scales. The legs are greyish brown, the extremities annulated with darker and white and furnished with long blackish and white spurs" ("Proceedings Dorset Natural History Field Club" &c., Vol. VIII., p. 55). The imago is also beantifully figured in the same work. Stainton describes it as:—"6‴-6½‴. F.-w. yellowish-brown, with the lobes intersected by two slender whitish fasciæ; third feather of h.-w. with no black tuft ("Manual," Vol. II., p. 445).

Larva—The larva is unknown, but in a letter Dr. Jordan wrote to me he mentioned that he had from M. Millière particulars of the life-history of the allied *baptodactyla* which was quite different from that of the *Aciptilia*.

Time of Appearance—The insect is double-brooded, occurring first in June and again in August. Mr. C. G. Barrett took a specimen in Woolmer Forest in June, 1865 ("Entomologist's Monthly Magazine," Vol. II., p. 263). "June," too, is the only date given in Stainton's "Manual," II., p. 445. The first examples of the Rev. O. P. Cambridge's specimens were taken from August 23rd to September 4th in 1886, whilst in 1887 he writes:—"The species would, however, appear to be double-brooded, as I found several in fine condition on the 14th and 16th of June. Thinking that these would be the progenitors of a second brood, I refrained from taking more than the few above noted. The first of this latter brood met with occurred on August 4th, and the last seen was on the 27th. Although on some of our finest and quietest evenings in August scarcely an individual was seen, it did not hesitate to fly briskly in the full blaze of a hot sun. A moderately dewy evening appears to draw this little moth out most freely, and the evenings of last August were remarkable for an almost total absence of dew" ("Entomologist," Vol. XX., p. 326). Mr. Cambridge further writes:—"I obtained none in 1888, and only two specimens in 1889" (*in litt*).

HABITAT—Stainton in the "Manual," Vol. II., p. 445, records this species as occurring "in the fens of Cambridgeshire"; but, most of the specimens captured of late years have come from the heathy bogs in Dorsetshire where it is said to haunt the flowers of *Northecium ossifragum*. The Rev. O. P. Cambridge writes: —"We were returning home (Aug. 23rd), wearied with a long afternoon's fruitless search for *Lycæna argiades*, and slowly tramping through a bog, often over ankle deep in water, when my son Arthur called my attention to a little plume moth, which he thought to be *Pterophorus bipunctidactylus*—a very common species of this group; before I could get to the spot however, it had disappeared. Soon another was seen and captured, when a single glance told me I had never seen the species before. A close search followed, and several more were netted before darkness came on. A reference to our books and collections on reaching home informed us of the value of our find; and almost every succeeding evening, at all fitting in point of weather, found some or other of us slowly and steadfastly working the bog until the whole brood was out and over. So far as our experience goes, it scarcely ever moves of its own accord until about half-an-hour, or often less, before sunset, and for a very short time after; indeed, of its own accord it was seldom seen flying, generally not flying until disturbed, when it would flutter up gnat-like among the bog grass and rushes, and jerkily fly off, for, at most, a few yards, settling again on a blade of grass, with its two long-spurred hind legs stuck out, one on each side, in a very characteristic way. On some evenings it would not fly at all; the most favourable kind of evening appeared to be a quiet, dewy, damp one, after a bright hot day." He then goes on to say:—"In England it was first discovered, but not abundantly, in the year 1850, by a professional collector named Stretten, in Holme Fen, Huntingdonshire, and was also found at Whittlesea, Cambridgeshire. In 1869 ("Entomologist's Monthly Magazine," Vol. V.) it was taken sparingly at Haslemere, by Mr. C. G. Barrett. Mr. Bond thinks it was also found in Norfolk some years ago by a professional collector named Winter. I understand that it was found some years ago near Crewe, by a Mr. W. Thompson, from 1850 to 1860, and about 30 years ago in the Fens by Peter Bouchard. These are the only occurrences I can ascertain anytning about until our next meeting with it in this county last year. I should mention, however, that in the same month (August) last year, Mr. Digby also met with several examples in a swamp near Studland. Mr. Eustace Bankes also tells me of a single specimen of this insect having been taken by Mr. C. G. Barrett in the month of June, 1865, in Woolmer Forest ("Entomologist's Monthly Magazine," Vol. II., p. 263)" ("Proceedings Dorset Natural History Society &c.," Vol. VIII., p. 55). The above was written in 1886. In 1887, Mr. Cambridge further writes:—"I understand that the Rev. Charles Digby has also again met with it near Studland and Mr. Eustace Bankes has found it near Corfe Castle; so that it is probable that it will in future be found, if worked for, on most of our heathy bogs" ("Entomologist," Vol. XX., p. 326) Staudinge and Wocke give as its range—"Finland, Germany, England and Catalonia" ("Catalog," p. 345). The reference referring to Mr. C. G. Barrett's capture in Woolmer Forest is as follows:—"On June 10th I had the satisfaction of taking a specimen of *Pterophorus paludum*, flying among the long grass, asphodel, &c., in a marsh in Woolmer Forest. It is difficult to see on the wing and I failed to find any more." Mr. Holland also writes:—"In a boggy hollow near Lyndhurst, I netted two specimens of this little plume at dusk on the 13th of August, 1889. It was a very windy evening and this was the only moth I could find moving" ("Entomologist's Monthly Magazine," Vol. XXVI., p. 87"). In the "Entomologist's Record and Journal of Variatim," Vol. II., p. 210, Mr. G. J. Parritt writes:—"On July 18th, I took a specimen of this species on Thorne Moor. I believe this is the most northerly locality yet recorded for Britain."

Marasmarcha, Meyr.

That *phæodactyla* should be separated from *Mimæseoptilus* is very evident. Its sexual demorphic condition and general build separates it at once in its closest affinities with the remaining members of that genus. With regard to the generic position of this species, Dr. Jordan writes :—"*Phæodactylus* certainly does not belong to this group, nor to any of the Swedish genera, but perhaps some Continental entomologist has, unknown to me, already characterised the genus. Its position is well indicated in Staudinger's list between the *Oxyptili* and *Mimæseoptili*; it there follows *ehrenbergianus*, a doubtful European species which I have never seen" ("Entomologist's Monthly Magazine," Vol. VI., p. 124-125). In the genus *Marasmarcha*, Meyrick includes seven species, of which one is *Leioptilus microdactyla*. The latter, however, seems to me more closely allied to other *Leioptili* than to the other species included in *Marasmarcha*. Meyrick's diagnosis of the genus is:—"Face with more or less projecting tuft; ocelli obsolete; tongue developed. Antennæ two-thirds, in ♂ ciliated ($\frac{1}{3}$). Labial palpi moderate, ascending, slender, terminal joint moderate, pointed. Maxillary palpi obsolete. Fibiæ simple, outspurs nearly eqnal inner. Fore wings bifid, cleft from before two-thirds; vein 2 from near angle, 3 and 4 from a point or stalked, 5 and 6 short, 7 from near 8, 8 and 9 stalked, 10 absent, 11 from near angle. Hind wings trifid, third segment without black scales in dorsal cilia; vein 2 from before middle of cell, 3 absent, 5 and 6 very short, 7 and 8 divergent from beyond cleft" ("Transactions Entomological Society of London," 1890, p. 448).

(To be continued.)

NOTES FOR BEGINNERS.—MICRO LARVÆ FOR THE MONTH.

BY GEO. ELISHA, F.E.S.

With December we enter on a totally different mode of larvæ collecting to that we have hitherto pursued, which if not quite so easy or pleasant, is often more productive as far as bred specimens are concerned, for now we commence our harvest of all those larvæ feeding in the *roots* of plants, which may be successfully pursued during this and the two following months.

It is certainly a time of year when the attractions of the fireside and easy chair are hard to resist, but the enthusiasm of a true entomologist often leads him away from such temptations, to some desolate looking locality perhaps, far away in the country, or on the sea coast, where he knows the plants he is in search of are most likely to be found. What to him is the gale of wind that is blowing, be it ever so cold, or the discomfort of walking over muddy, broken ground; nothing at all. The very time of year tells him what to expect, and he goes equipped accordingly, then he can defy such trifles, for he is sustained by the thought of the splendid condition of the species he is sure to breed, if he is only successful enough to get together during the winter season, a good supply of roots containing larvæ from various localities; and also by the pleasure he will have in being able to help his friends to many bred, very local, and possibly rare species.

We will now again take one of our pleasant rambles in the country, for it is indeed a pleasure, be the time of year what it may, to stroll along the lanes in company with a friend of kindred tastes, each animated by the same desire to elucidate the life-history of some of the species that are still unknown. We must not forget to take a good sized strong bag, a sharp knife, and a firm trowel, or better still a long sharp chisel, with which to dig up the roots, for some go deep, and must be got up with as little injury as possible and transferred to the bag, till we have sufficient to carry conveniently. The experience we have gained during the previous months in collecting larvæ from the leaves and seeds, is now of use to indicate the places where the plants we are in search of are to be found, although the leaves and seed heads by this time have disappeared.

The dead stems of the mugwort *(Artemisia vulgaris)*, will no doubt be the first plant to attract our notice. We must now examine the bottom of the stems, about an inch or so from the ground, and in some we shall see little heaps of frass exuding from small holes in the sides. This is caused by the larvæ of *E. fœneana*, *D. simpliciana*, and very probably *E. allisella*. We must cut off the stems to within an inch of these holes, and dig up the root, no easy matter if the root be an old one; it is impossible at this time to tell whether *E. allisella* is there, but in the spring when the *Artemisia* is some inches above the ground they mine up the fresh shoots, causing them to droop and die. Some old roots of yarrow *(Achillea millefolium)* growing on the edges of an overhanging bank next attracts us; on digging up one and breaking it open, we are rewarded by finding the larvæ of *D. petiverana* and *plumbagana.*

We continue our journey, and are fortunate ln finding some fine old roots of tansy *(Tanacetum vulgare).* This being a very local plant and seldom met with, we must give it our best attention. If, on digging up a root and breaking it open, we find larvæ feeding within, we must take a good supply of roots, for we may breed from them *D. sequana*, *alpinana*, *tanacetana*, and *politana.* This being a plant not at all common, it is as well to break off all fresh shoots and re-plant with the waste pieces, to serve on some future occasion. We must now examine the roots of those plants of *Stachys arvensis*, growing at the side of that cultivated field, for we may perhaps find the larva of *O. antiquana.* The Ragwort *(Senecio Jacobæa)* is a plant we are almost sure to meet with during our ramble, and those plants growing on rough sloping banks the most productive. If we select one and bend the dead stems downward, some of them will break off about an inch from the ground, on examining these broken ones, we shall find that they have been gnawed partly through, which caused them to break, and on looking at that part left in the ground we shall find it webbed over, this is the work of the larva of *A. œncana*, which is white with brown head, this species is mostly found in the small single roots, and in the larger ones the light yellowish larva of *E. atricapitana*, and mining down outside the roots, often working their way partly inside, the pinkish larva of *E. trigeminana* will almost surely be found.

We will now again visit a locality by the seaside, the dead stems of the sandwort *(Salsola Kali)* is still to be seen sticking out of the sand, on scraping up the surface and sifting it through a piece of coarse canvas having about one eighth of an inch mesh, the coccoons of *G. canella* may now be taken. Some little distance from the shore where the marram grass is growing, some old roots of plantain *(Plantago lanceolata)* will generally be seen, if we dig up one of the unhealthy ones and break off the crown, we shall probably find a larva inside, quite filling up the stem; this would be the larva of *H. simuella.* We will take a good supply of roots, for this species is not found everywhere. The roots of the wild carrot growing on rough ground a little further inland must now be examined, when the larva of *A. zephyrana* will be found inside near the surface of the earth. Distributed about on the broken ground of landslips or ledges of the cliffs, will be found many old roots of the knapweed *(Centaurea nigra)*. We must examine some of them, and shall no doubt soon be rewarded by finding the larva of *X. zœgana*. In breeding this species, we are pretty sure to have some fine dark specimens emerge.

The above are a few of the species that may occupy some of our spare time during the winter months. We should at the same time keep a good look out for any local plants that are likely to contain larvæ, for we may, by doing so, unexpectedly breed a new species, or one whose early stages are at present unknown. Now just a word as to rearing the larvæ from the roots we have obtained. Get any medium sized boxes without lids, about twelve inches deep, and put a layer of earth about two inches deep at the bottom, sort out the roots, keeping only one sort in each box, and then place them side by side as close as possible, till the bottom is covered all over, then sprinkle earth all over till the roots only are covered, the stems remaining above the surface and shake well down to fill up the interstices and place out in the open air, leaving them exposed to all weathers till near the time of emergence, no more attention is required, and there is very little doubt but that at the end of the following season we shall be fairly well pleased with the result.

122 Shepherdess Walk, City Road, N.

CELŒNA HAWORTHII,

(*Read before the Lancashire and Cheshire Entomological Society, October 12th, 1891*)

BY C. E. STOTT.

My first experience with the subject of to-night's paper goes back to the time when I commenced to study the order Lepidoptera; and I can well remember when my two elder brothers returned from a day's shooting on the moors, bringing with them a dozen or more specimens of this insect; and, above all, I can well recollect the zeal with which I pored through "Newman's" pages, and the pride with I finally determined them to be *Haworthii*. I truly believe those specimens were, to me, more valued than my two brothers' "bags" put together.

I can also well recollect the following day when, accompanied by one of the "discoverers," I trudged laboriously to the same spot, and incurred the wrath of the distant grouse beaters by trespassing across their line of beat. No subsequent entomological experience has afforded me the same pleasure and delight as did those good old times when almost anything that came to hand was new to me and consequently required naming. Since those days, however, frequent excursions after the insect have somewhat sobered my admiration of Haworth's minor.

Situated on the south side of the thriving town of Horwich, and isolated from the neighbouring moors by advancing cultivation, lies an oblong piece of moorland, by name Red Moss, now suffering, as Chat Moss is doing, from gradual reclamation by the local landowners. On the borders of this moor will be noticed broad deep ditches with numerous smaller ones running irregularly across. From the East end, travelling directly up the middle, you will find the remains of what was once a road, and on each side of this old footpath grow Heather and Ling in abundance, while to the right and left of us are to be seen vast tracts of Cotton grass gracefully waving in the breeze. Our minds made up, my brother and I one morning sallied forth together for a day after *Haworthii*; and after an hour's steady walking we came in sight of our destination. Having negotiated the moat-like ditch, we immediately commenced operations by each taking a side of the middle path before referred to; and being on the capture of *Haworthii* bent, we ignore larvæ of *Carpini*, *Pisi*, &c., and possible captures of minor interest. At this time of the day, *Haworthii* can be taken either on the wing, resting on heather, or by searching at the roots. Given a fine warm day, they can be seen flying lazily from one bunch of heather to another, or careering madly over the moor. But the best plan is to look steadily at clumps of heather two or three yards in front; and if we don't do this our chances of *Haworthii* are considerably lessened, for at the slightest shock they draw their legs in and wriggle, by the aid of their wings, down to the roots of the plant they were resting on. This instinct of the insect appears to be very highly developed. At times I have crept quietly up to a patch of heather on which two or three of them were busily extracting the nectar. I have quietly shaken the turf, and down they at once went, to an insect, and the further you follow them down into the roots the further they go. I have sometimes obtained as many as five from a single clump, and cn a dull day this method I find is the only successful means of taking *Haworthii.*

By the time we have filled all our boxes, the rooks can be heard making their way leisurely to the various local rookeries, reminding us of approaching sundown and therefore time to return home. Until within the last three years, my brother and I worked this place more or less successfully; but one day failing to obtain a full supply, we decided to remain until dusk, and were rewarded for our perseverance by taking more *Haworthii* that night than we ever took in the daytime. We found that we could, by a considerable amount of fatigue, take them on the wing as they flew wildly over the moor at a break-neck speed; and often have we come home wet to the skin as a result of racing after this insect. Naturally keeping our eyes open, we were, on one of these evenings, rewarded with a still more important discovery. I cannot say whether the discovery is original or even known to a few; but we found that female *Haworthii* had the additional virtue of "assembling." Wandering over the ground one wet evening, and feeling a "wee bit" disgusted with my ill-luck, I sat down for a quiet smoke while my brother worked his way up to my end. Comfortably seated, I had barely time to light my pipe when, in the dim distance, I saw what appeared to me half-a-dozen or so of *Haworthii* hovering, *H. humuli* fashion, over a tuft of Cotton grass. Down went my hand to the net, and keeping to leeward, I slowly crept up and took three of them at one single swoop. I simply howled for my brother, and we diligently helped ourselves, for the rest of that evening, to the droves of males that were attracted by that one female. The following extracts from my brother's diary show with what success we followed this mode of capture:—In the year 1888 our biggest bags were, Sept. 12th, 80; Sept. 17th, 60; Sept. 8th, 35. In 1889, Aug. 10th, 57; Aug. 9th, 34, &c.; and my brother's records show that our total muster for the last three years is nearly 1000! and when one comes to consider that the species does not commence to fly until the last quarter of an hour before dark, one can imagine the excitement when, having found the female, we each stood over the spot taking all that came. I have marked a male going by at a terrific pace, when, coming to leeward of my clump it immediately sobers down into a steady flying insect wending its way slowly, and in all probability in the company of others, up to its doom. Both Mr. Percy Russ (of Sligo) and Mr. Reid (of Aberdeenshire) inform me that they have found it during the day on Ragwort flowers and also at night; for the first time I captured the species on thistle 2 miles away from the moors the other day. It has also been *taken at "sugar" in Scotland, ("Entomologist's Monthly Magazine," 1880, p. 258).

Although I cannot assert definitely, yet there seems to me no doubt that *Haworthii* deposits its eggs singly on the plant of its choice. I have, at various times, been in possession of the ova, which hatch about the middle of April, and the young caterpillar at once enters the young shoots of the cotton grass, little given to wandering, and where it can afterwards be traced by the moulds of frass, which can be seen on the surface of the ground, for all the world like Schultz's powder.

Mr. Reid says of the larvæ that he has found them resting on the extreme tips of the cotton grass on fine nights in June; but omits to say whether they were feeding or not. When full fed this larva forms a delicately constructed cocoon, and the pupa can be found from July to the middle of October, in tufts of its pabulum, under stones, &c. For a description of the larva I must refer you to an elaborate sketch by the late Mr. Buckler. which is to be found on pages 195-7 of the E.M.M. for 1872. The perfect insect flies during the months of August, September and October.

Turning to the subject of variation, we find that there are three distinct varieties; namely *lancea*, *tripuncta*, *and hibernica*, to which are added *morio* and *erupta*, by Mr. Tutt. The variety *hibernica* differs from the type as being of a more ferruginous tint, less marked with white, and the obicular concolorous and indistinct. Variety *lancea* seems only to be a miniature form of *hiberuica*; it is said to be only half an inch in expanse, almost uniformly coloured fore-wings, with the scarcely waved posterior strigæ, and paler hind-wings. Variety *tripuncta* was first described and figured by Humphreys and Westwood as having both stigmata distinct and pale, as well as a patch resting upon the subapical strigæ near the costa of the fore-wings. I have carefully examined and compared the figure with the female of this species, and there seems to me no doubt whatever that it is only the female type. Humphreys and Westwood in their "British Moths" also figure and describe an additional species to this genus in the name of *venigera*, based on the fact that specimens of the insect existed in some of the old cabinets, and were supposed to have been taken near London. The species however has since been placed, I believe by Mr. Kirby, with the *Agrotidæ*, and is of very rare occurrence in Europe, and is certainly not British.

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*During the discussion which followed, Mr. Collins (of Warrington) stated that he took it very freely by "sugaring."

With the short space at my command, I have been unable to satisfactorily work out the geographical distribution of *C. Haworthii.* In the South it seems to be extremely local and confined to the counties of Sussex, Hants, Norfolk, Huntingdon, Bedford, Cambridge, Northampton; in Staffordshire, Derbyshire, Cheshire, Yorkshire, Lancashire, Durham, Cumberland, and Westmorland, it is taken commonly though rather local; there is also a record of its occurrence in the Isle of Wight. I only hold two Welsh records—Denbighshire and Glamorganshire—but it is no doubt taken pretty generally throughout Wales. In Scotland it seems to be abundant and generally distributed in the Highlands, and is to be also occasionally met with in the Isle of Arran. In Ireland it has been taken commonly in the East and West Counties, and the variety *Hibernica* is to be taken on the Dublin and Wicklow hills. Dr. Staudinger says that it occurs in Germany, North France, Livonia, Finland, Lapland and the Ural mountains.

In conclusion, I desire to record my many thanks to Messrs. South, Porritt, Fenn, Reid, and Farren for their help in working out the geographical distribution of this insect; and to Mr. Tutt for his kind assistance in naming the varieties.

Bolton, October, 1891.

Notes.

FORCING AGROTIS ASHWORTHII.—Having been successful this autumn in rearing *Agrotis Ashworthii* from the egg, and as this larva has the reputation of being very difficult to rear, perhaps a few notes as to the way in which I managed them may be interesting and useful to others who may in future have a similar opportunity of breeding this rare and beautiful moth.

Whilst staying at Penmaenmawr (North Wales) in July this year, I was fortunate enough to come across the locality where *Ashworthii* occurs. From what I saw of it, it seems to be confined to one very restricted locality, and though fairly plentiful in that one spot, it might very easily escape notice if not especially looked for, as the cliffs which it frequents do not present at all an attractive appearance from a distance, but on closer inspection are seen to be broken up into numerous narrow, deep cracks which are filled with various grasses, heather, thyme and sundry other plants.

The moth sits through the day, fully exposed on the face of these rocks, but its colour harmonises so perfectly with them that very close searching is necessary to find it. This, however, is not without its advantage, as one is the more likely to find ova as well as the imagines. The eggs are laid in batches of 30 or 40, generally on the rock itself, but sometimes on a dead twig of heather or grass, and seem to be deposited at haphazard by the female, as in some cases I could see no living plant within 30 or 40 feet of them; but as the young larvæ are very lively customers and not particular as to what they eat, they probably are not long in finding something suitable to feed upon.

From July 20th to 30th I found a dozen imagines and as many batches of ova (some of which were already hatched), but I did not take above 80 eggs. Above 60 of these hatched (the rest having probably been injured in getting them off the rock) and the young larvæ, which, like many other noctuæ larvæ "loop" when first hatched, took readily to both willow and plantain. During the first ten days of their existence they only got on slowly, and as I felt pretty certain that if I allowed them to hybernate in their natural condition, I should only get a small proportion of them to live through the winter, I determined to try if they could not be induced to feed up straight away. To this end, as soon as the larvæ had changed their first skins, I divided them into four lots, putting each into a good sized glass jar, in which was a bottle containing their food plant, and put the jars in a very warm place in the kitchen. The heat, which, as a rule could not have been less than 80° Fahrenheit inside the jars, soon began to have a good effect, and by the end of August nearly all the larvæ had reached the stage in which they would hybernate in a wild state. As soon as they were so far advanced I removed them into flower pots, so as to give them more air, but still kept them in the same warm quarters, and soon had the satisfaction of seeing that the greater part, if not all, would feed up. From this time they increased in size very irregularly, a few not feeding at all and others very sparingly, but by the 20th of September I had upwards of 25 full fed, and these I again moved into well-ventilated cages containing some light peaty earth, into which they soon began to disappear. On turning out the cages later on, I found that these had produced 20 pupæ, a few having died in the operation of changing. About the middle of October some of the smaller larvæ began to show signs of having had enough of it and a dozen or eighteen of these died off, whilst some of the remainder did not seem disposed to allow themselyes to be hurried, and fed very slowly; so slowly that at the time of writing I have still 14 feeding on plantain, though these are all just about full fed. In all, up to date, I have obtained 25 pupæ and if I can get another dozen from the rest of the larvæ I shall be very well satisfied.

The first imago appeared on the 28th October and at the present time I have had about 16 out. I was rather doubtful as to whether the moths would suffer from being subjected to such heat, but they are quite as large as and better marked than those I took wild.

The larvæ do not seem specially difficult to manage, and are content with a variety of food. At first I fed them on various willows and when that became scarce, on knot grass, heather, bindweed, and lastly on plantain. They vary very little, mostly in the ground colour, which is sometimes nearly black, but generally darkish green. In one case the black patches on the back were reduced to about a third of the usual size, but this was the only variation I noticed.—L. S. BRADY, Sunderland.

C. HAWORTHII IN IRELAND.—*C. Haworthii* is widely spread all over Ireland. I have taken it wherever I have been in suitable localities in the East, West, Central, and Northern tracts of heather; viz.:—Dublin and Wicklow mountains; Westmeath bogs; Oxhill range, County Sligo; und on Donegal moors. It flies on sunny days, (it is said to affect the plumes of bog cotton, but I have never taken it thus,) and at dusk, when I have taken it freely about mid-August. The larva I have seen in the roots of bog cotton plants, even well below the surface in very wet marshes. I think the end of June is about the best season to work for them, by digging up the roots of tufts which appear to be stunted. It is, (in spite of being an internal feeder, and often below water,) subject to the attacks of ichneumons; what species I do not know, but I have sent specimens to Mr. Bignell. —W. F. de V. Kane, Kingstown.

Coleoptera.—Notes.

Coleoptera in Flood Refuse at St. Leonards.—Owing to the heavy rains during October, the Bopeep Marshes, near St. Leonards, were flooded to a considerable extent and a few hours' work among the flood refuse resulted in a somewhat considerable haul of fully a hundred species of Coleoptera, some of which may be worth recording, and about a thousand specimens. Some species occurred in the utmost profusion, particularly *Bembidium obtusum*, *Tachyporus brunneus*, and of course *T. hypnorum* and *chrysomelinus*, and *Simplocaria semistriata*, I usually had from a dozen to fifty of these on my paper at a time. Many others were common, such as *Bryaxis helferi*, of which I took over a hundred, *Hypera trilineata*, *H. variabilis*, *H. nigrirostris*, and *Myrmedonia canaliculata* were all very common and I bottled half a dozen of the rarer *M. limbata*, *Xantholinus linearis*, *X. punctulatus* (both abundant), *Pæderus littoralis*, *Harpalus consentaneus*. I passed this latter over at the time as the common *H. latus*, so only secured a few. I found out my mistake when too late, as on the next occasion I visited the marshes there was not a single specimen to be found. Several species of *Homalota*, *Cercyon*, *Apion*, &c. were extremely common; among them I took a few *Cercyon aquaticus*, *C. melanocephalus*, *C. unipunctatus*, *Homalota trinotata*, &c., and I have several species not yet determined. I took a long series of *Achenium humile*,—this is a rare insect in this district, and I have only met with it singly before. I also took a nice series of *Agathidium marginatum*, *Carcinops minima*, and *Thyamis pusilla*. Among others which frequently turned up were *Amara tibialis*, *Olisthopus rotundatus*, *Bradycellus verbasci*, *Notiophilus aquaticus*, *N. palustris* (common), *Metabletus foveola*, *M. truncatellus*, *Ocypus cupreus*, *Alcochara nitida*, *Lithooharis melanocephala*, *Stilicus affinis*, *Hypocyplus longicornis*, *Helophorus nubilis*, *Psylliodes chalconura*, *Plectrocelis concinna*, &c.; occasionally I found specimens of *Loricera pilicornis*, *Xantholinus tricolor*, *Quedius picipes*, *Megarthrus depressus*, *Nitidula bipustulata*, *Omosita colon*, *O. discoidea*, *Hyperaspis reppensis* (4), *Micraspis 12-punctata*, *Scymnus frontalis*, *Telmatophilus caricis*, *Mycetoporus Reyi*, *M. splendidus*, *Conurus lividus*, *Aphodius subterraneus*, *A. prodromus*, *Gronops lunatus*, and many more. I was surprised on visiting the same locality a day or two later to find that, with the exception of a few common *Tachypori*, there was nothing left in the refuse. -A. FORD.

Mollusca.—Notes.

BYTHINIA TENTACULATA L. seems to be spreading in America very rapidly. The latest recorded locality is Black Lake in the State of Michigan, so that it is well started on its Western march. Another English species that has asserted its fitness pre-eminently as a colonist is *Helix aspersa* Müll., and this shell has already reached the Pacific coast of the United States, having been collected 12 years ago at San José in California by my friend Dr. Yates. There is hardly a country in the world, in fact, where *H. aspersa* has not turned up. Specimens from Melbourne, Victoria, were kindly communicated to me some time ago by Mr. Standen. Speaking of *Helix aspersa* Müll. reminds me that I never published the discovery of a colony of the little known var. *vivecens* Req. in Guernsey about 5 years ago, at least such the shells were considered to be by Mr. W. H. Heathcote and myself at the time. About 4 adults and 7 or 8 immature specimens occurred, and, while possessing translucent *marking* of the regular *aspersa* type, they were in coloration undoubtedly a pale uniform green: shell of normal size and very thin but not at all of the var. *tenuior* type. The habitat was a likely-looking spot on the edge of Bordeaux Harbour, with loose stones and bits of wall loosely built, and with it lived a large light-coloured form of *Helix pisana* with a decided tendency to efascation. A not very thorough search last August failed to produce any *aspersa* of this variety, though the *pisana* had increased markedly in numbers. The latter are a very distinct race from their kindred on the west coast at Vazon Bay, where one quickly recognises the darker-coloured, smaller, and more Tenby form. The question of the introduction and naturalization of *Helix pisana* into the island by Dr. Lukis is fully explained in Vol. II of the "Journal of Conchology," by Messrs. Rimmer, Cooke, and Tye.

In the current number of the "Nautilus" Mr. T. D. A. Cockerell has a synopsis of the named varieties of *Agriolimax agrestis*, L. This ubiquitous species is now placed on record for the Pacific coast of the States, from San Francisco and Portland, Or. Out of the seventeen varieties here signalized, seven have already been noticed in America, viz.: *typicus* Less., *succineus* West., *albidus* Picard, *sylvaticus* Moq., *reticulatus*, Moq., *varians* West., *obscurus* Moq.—by the bye, should not all these varietal names, except *varians*, end in 'a' and not 'us'?

We have received from Mr. Cosmo Melvill, "An historical account of the genus *Latiris* and *Peristernia*." Even to a novice this is most interesting in its lucid and valuable exposition of a rather neglected genus with incidental information of a varied kind. We note *en passant* the increasing aid to classification rendered by more detailed examination of the rodulæ, though at times it clashes with external indications. Mr. Melvill indeed would probably have united the genera *Peristernia* and *Latirus* but for the palatal diaquoses of Messrs. Gwatkins and Cooke.—B. Tomlin, Llandaff.

Gleanings.

Pterophorus paludum in Yorkshire.—Our friend Mr. G. T. Porritt, of Huddersfield, records in the "Naturalist" for September, the occurrence of this rare plume on Thorne Waste, on 18th July last. Neither he, nor his companion, Mr. J. Harrison, of Barnsley, recognised it when boxed, and when examined subsequently, was found to agree very closely with Dorsetshire examples of *paludum*, but to be both larger and finer. It was sent to Mr. Webb, of Dover, whose reply was "*paludum*, a very fine and large specimen." It is very satisfactory to find this rare plume occurring in another new locality, and we hope it will prove more abundant than the Dorsetshire specimens.

We observe with some pleasure that a comprehensive work on British Lepidoptera by C. G. Barrett, Esq., is to be commenced. A work of this character was greatly needed, and no one is better qualified to carry it out than Mr. Barrett. It is nearly 40 years since Stainton's Manual appeared and an enormous number of species have been discovered in Britain since then. We especially welcome it because it will settle the nomenclature of our British species for the next half century, and rescue us from the slough of despond in which we have been driven by those who make science subservient to nomenclature.

Mr. Tutt has reprinted his papers on melanisu, and they can be had from him for 2/6.

A new work on British Diptera is announced, but it appears from prospectus to be more of a popular than a scientific character. It is published bi-monthly, by Elliott Stock, at 1/- per part.

A new work on British Hemiptera—Homoptera, by Mr. Edward Saunders—is also in the press.

Reports of Societies.

ENTOMOLOGICAL SOCIETY OF LONDON.

Nov. 4th.—Dr. David Sharp, M.A., F.R.S., Vice-President, in the chair.

Major John Nathaniel Still, of Tiverton, Devon, and the Junior United Service Club, Charles Street, St. James's, S.W., was elected a Fellow of the Society.

Mr. W. F. Kirby exhibited a series of a very dark-coloured form of *Apis* reared by Mr. John Hewett, of Sheffield, from bees imported from Tunis, and which he proposed to call "Punic Bees." They were larger than the black *Apis unicolor*, Latr., of Mauritius and Bourbon, and were almost entirely black, except in the legs which were of a more or less reddish colour.

Mr. C. G. Barrett exhibited five melanic specimens of *Aplecta nebulosa*, reared by Mr. Collins, of Warrington, from larvæ collected in Delamere Forest, Cheshire, and described by him, in the 'Proceedings of the Lancashire and Cheshire Natural History Society,' as *A. nebulosa*, var. *Robsoni*, in honour of Mr. John E. Robson, of Hartlepool. Mr. Barrett also exhibited a beautiful variety of *Argynnis aglaia*, taken in Norfolk by Dr. F. D. Wheeler, and two specimens (male and female) of *Lycæna argiades*, taken in August. 1885, on Bloxworth Heath, Dorsetshire, by Mr. C. O. and Mr. A. Pickard Cambridge respectively.

Mr. H, St. John Donisthorpe exhibited a collection of Coleoptera, comprising about thirty-six species, made in a London granary in 1890 and 1891. The genera represented included *Sphodrus*, *Pristonychus*, *Calathus*, *Quedius*, *Creophilus*, *Omalium*, *Trogosita*, *Silvanus*, *Lathridius*, *Dermestes*, *Anthrenus*, *Corynetes*, *Ptinus*, *Niptus*, *Anobium*, *Blaps*, *Tenebrio*, *Calandra*, *Bruchus*, &c.

Mr. A. B. Farn exhibited a series of specimens of *Eubolia lineolata*, bred from eggs laid by a specimen taken at Yarmouth. The series included several remarkable and beautiful varieties, and the size of the specimens was much above the average.

The Rev. Dr. Walker exhibited specimens of *Argynnis ino*, *A. pales*, and *A. frigga*, from Norway.

Mr. B. A. Bower exhibited, for Mr. J. Gardner, specimens of *Nephopteryx splendidella*, H.-S., *Botys lupulinalis*, Clk., and *Bryotropha obscurella*, Hein., taken at Hartlepool last June and August.

Mr. R. Adkin exhibited two very dark specimens of *Peronea cristana*, from the New forest.

Colonel C. Swinhoe exhibited, and remarked on, types of genera and species of moths belonging to the *Tineina*, all of which had been discribed by Walker, and placed by him amongst the *Lithosidæ*.

Mr. H. Goss exhibited specimens of *Callimorpha hera*, taken in August last by Major-General Carden in South Devon, and observed that the species appeared to be getting commoner in this country, as Gen. Carden had caught seventeen specimens in five days. Mr. Goss said that the object of the exhibition was to ascertain the opinion of the meeting as to the manner in which this species had been introduced into this Country. A long discussion on this object and on the geographical distribution of the species ensued, in which Mr. G. T. Baker, Mr. Stevens, Mr. Barrett Colonel Swinhoe, Mr. M'Lachlan, Mr. Verrall, Capt. Elwes, Mr. Fenn, Mr. Jacoby and others took part.

Mr. C. J. Gahan contributed a paper entitled "On South American species of Diabrotica: an appendix to Part II."

Mr. M'Lachlan contributed a paper entitled "Descriptions of four new species of holopthalmous *Ascalaphidæ*."

Mr. W. L. Distant communicated a paper entitled "Descriptions of four new species of the genus *Fulgora*."

Mr. F. Enock read a paper entitled "Additional notes and observations on the life history of *Atypus piceus*." Every detail in the life-history of this spider was most elaborately illustrated by a large number of photographs, made by Mr. Enock from his original drawings, and shown by means of the oxy-hydrogen lantern. A discussion followed, in which Mr. C. O. Waterhouse, Dr. Sharp, Mr. G. C. Champion, the Rev. A. E. Eaton, Mr. P. Crowley, and others took part.—H. Gross, *Hon, Secretary.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

November 12th.—Mr. W. H. Tugwell, Esq., President, in the chair. Mr. Cooper exhibited a variety of *Abraxas grossulariata*, L., well banded and there being no trace of yellow in the markings of the wings. Mr. Auld a hornets nest from Ware. Hertford. Mr. West (Streatham) *Polia chi*, L., from the lake district, one specimen being extremely dark. Mr. Herbert Williams wine corks perforated by the larvæ of some insect—one of these larvæ was also exhibited; Mr. Williams stated that they were doing a considerable amount of damage to a wine merchant in the city, the corks of over two hundred bottles of port (for which wine the species showed a decided preference) having been attacked. Mr. C. G. Barrett said he thought the larva was half-grown but it was very active and might be the common *Endrosis fenestrella*, Scop. Mr. Adkin said he did not think the larvæ confined their attention to port wine corks, nor did he think they ever went through the cork into the wine. Mr. Forrester showed *Bombyx quereus, L.*, var. *callunæ*, Palmer, from Perth. Some remarks were made with reference to this exhibit in the course of which several instances were mentioned of full fed larvæ of *B. quercus*, having been taken in the autumn, at Folkestone and elsewhere. Mr. E. Joy *Epinephele hyperanthus*, L., the variety *arete*, and others approaching it. Mr. C. G. Barrett a variety of *Argynnis aglaia*, L., taken in Norfolk, two specimens of *Lycæna argiades*, taken on Bloxworth Heath in 1885, and specimens of *Aplecta nebulosa*, Hufn., reared by Mr. Collins of Warrington, from Delamere Forest and named by him var. *Robsoni*. Mr. Tugwell exhibited some some parasitic fungi and remarked that it was one of the Entomophthoræ—a tribe of fungi parasitic an insects. He noticed this fungoid growth apparently growing from the soil in one of his breeding cages in which eighty larvæ of *Scotosia certata*, bred from ova, had pupated, the larvæ were fed on *Berberis vulgaris*, the fungi were half an inch or more high; on examination he found that each of the fungus sprung from the pupæ of *certata* the whole of which were dead. Some were enveloped in the fungus but others were apparently healthy, but traces of white thread-like spots of the fungus were noticeable, and the pupæ were dead and could be snapped asunder like a damp rotten twig. Thinking that the germ of the fungus might have been introduced into the larva by the food plant, Mr. Tugwell stated that he had placed some pupæ of *Gortyna flavago* in some of the same soil, and all those that were not on the point of emerging were killed by the fungus. Mr. Fenn said he had experienced the same thing in two or three cages. Messrs. Adkin, Carrington, West, and others took part in the discussion which ensued. Mr. Adkin again exhibited the specimen of the Tortrix which Mr. Carpenter had named *donelana* and remarked that he had been stated, in a report of a previous meeting, to have exhibited these specimens as *Tortrix steineriana*, var. *dohriana*, he had, however, when exhibiting them, said he had considered them to be *Tortrix viburnana*; he had now a specimen of the variety *dohriana* from Dr. Staudinger's collection. Mr. Tutt had brought his series of this variety which he had received from Herr Hoffman, and Mr. C. G. Barrett had brought specimens of *T. steineriana* and examples of *T. viburnana* and its varieties. Mr. Barrett said he had been in correspondence with Mr. Carpenter on this subject and was still of opinion that the specimens were simply *T. viburnana*, Mr. Carpenter had written him that although the larvæ fed on pine, an example had fed equally well on *vaccinium*. Mr. Tutt said that in this part of the genus there were some six or eight species closely allied and it was difficult to separate these after studying the variation among them, and he added that the figure published by Mr. Carpenter was undoubtedly *steineriana*; he did not for one moment suggest that Mr. Barrett was not right in calling the Irish specimens *viburnana* but until more material was obtained he did not think it could be assumed that they were distinct from the Continental *T. steineriana* var. *dohriana*. Mr. Barrett remarked that Mr. Carpenter's figure was from a single specimen and was extremely unlike the majority of specimens which had since been bred. Mr. Oldham exhibited, among other species a black var. of *Cerastis spadicea*, Hb., from his garden, near Epping Forest, and a specimen of *Apamea ophiogramma*, Esp., taken in the Forest. Mr. South remarked that the first-named species should be called *ligula* as it was not at all like Hubner's figure of *spadicea*.—H. W. Barker, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.

November 9th.—Mr. S. J. Capper, F.L.S., F.E.S., in the chair. Mr. R. Newstead, F.E.S., read a paper: "General Notes on the scale insects Coccidæ." The author gave a brief resumé of the work done by the earlier naturalists and enumerated types.

of the principal genera (of which he had drawn large coloured diagrams in illustration). In the course of his remarks he described the distinctive characters and exhibited drawings of the following new species:—*Lecanurni assimilis* n.sp. on *Aster* at Colwyn Bay, *L. minimum* n.sp. on *Areca* under glass, Cheshire, *Pulvinaria persicæ* n.sp. on peach, Cheshire, *Pseudococcus associalis* n.sp. on *Ribes*, Yorks.; *Ripersia tomlinii* n.sp. on grass roots in ants' nests, Guernsey, *R. pulveraria* n.sp. under leaf sheaths of *Agrostis*, Cheshire. Mr. Neustead exhibited specimens of 172 species of Coccidæ, which included all the known British species. Mr. Gardner exhibited *Coccus cacti* and *Carteria lacca*, the latter with their products. The Secretary *Aspidiotus personatus*, *Vinsonia pulchella*, and *Lecanium oleæ*, the latter were much broken by some Lepidopterous (?) larvæ which had formed silken tunnels under the scales. The President exhibited melanic and other forms of *Liparis monacha* Mr. Gregson varieties of the *Dianthecia conspersa* which he divided as follows: *Conspersa*, var. "*pronouncæ*," black and white, little if any ochreous yellow, "Port Patrick," South Scotland, *D. conspersa*, var. *ochræ*, all the usual white obscured with ochre, whole insect ochreous; *D. conspersa*, var. *obscuræ*, all light markings obscured with brown ochre colour, "Forres," Moray; *D. conspersa*, var. *obliteræ*, whole insect dark olivaceous brown, usual markings faint sometimes quite obliterated, Shetland, and *Abraxas grossulariata*, bred by him this year. Mr. Walker, water-colour drawings of *Deilephila galii* and Mr. Stott, a noctua exhibited some time ago which has since been pronounced to be a variety of *Epunda lichenea* by Mr. Barrett.—F. N. PIERCE, *Hon. Sec.*, 143 Smithdown Lane, Liverpool.

GUERNSEY NATURAL SCIENCE SOCIETY.

The usual monthly meeting of the *Guernsey Society of Natural Science and Local Research* was held at the Guille-Alles Library last Wednesday evening Nov. 18th, in the absence of the President (Mr. John Whitehead), and the Vice-President (Mr. Thomas Guille), the chair was taken by Mr. E. D. Marquand. There was a good attendance of members.

Mr. Z. Robert exhibited a number of interesting geological specimens which he afterwards presented to the museum.

Four new Sections were founded on similar lines to those of the Geological Section, which has been doing very good work throughout the year under the direction of its honorary secretary, Mr. A. Collenette, F. C. S., F. R. Met, Soc.

These new Sections, which are intended to specialise and expedite certain departments of the Society's works, will respectively deal with,

Botany..........	Mr. Royle, hon. sec.	Folklore..............	Mr. Pitts, hon. sec.
Entomology	Mr. Luff, ,,	Marine Zoology........	Mr. Sharp, ,,

Twelve new members were proposed for election at the next meeting.

A very interesting discussion then took place on "Flowers and their origin," the subject being ably introduced by Mr. Royle. He was followed successively by Mr. Marquand, who spoke on the influence of locality in the modification of flowers; by Mr. Rose, on insects and flowers; by Mr. Sharp, on floral development; and by Mr. Collenette, on the geological record as it bears upon the origin and history of flowers. Each address was limited to five minutes. Afterwards a very interesting conversation sprang up among the members generally, touching various points referred to by the different speakers. The proceedings throughout were very enjoyable.

Report of the City of London Society did not reach us in time.

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BRITISH MUSEUM NATURAL HISTORY.

EXCHANGE.

*Lepidoptera marked * are bred.*

EXCHANGE, DUPLICATES.—Alexis Artaxerxes, Carpini,* Plantaginis,* Velleda, L. dispar,* Illustraria,* Suffumata, Ribesiaria, Conigera, Nictitans, Tenebrosa, Tritici, Valligera, Lucernea, Festiva vars., Neglecta, Suspecta, Rufina, Adusta, Dentina, Solidaginis.—WILLIAM COWIE, 5, Canal Street, Aberdeen, N.B.

EXCHANGE.—Wanted Tertiary fossils, named and located. Offered in return Mediterranean shells, lepidoptera, &c.. state desiderata; offered also Foraminifera, mounted or unmounted.—J. H. COOKE, Highland House, St Julian's, Malta.

Desiderata, Formicæformis Culiciformis, Porcellus, Statices Rubricollis, Complana, Lurideola, Sericea, Caniola, Pygmæola, Deplana, Aureola, Griseola, Strainmeola, Muscerda, Mesomella, Miniata, Irorrella; I will endeavour to make a good return.—JOHN E. ROBSON, Hartlepool.

Australian Bird's skins and eggs, and other natural history specimens offered in exchange for Cretaceous fossils or skins and eggs of British birds.—J. HAMMERTON, JUNR., c/o Hammerton and Son, Geelong, Victoria.

EXCHANGE.—Colquhounana,* Musciformis,* Carmelita, Trepidaria,* Desiderata.—Numerous.—H MURRAY, Lowbank Villas, Carnforth.

EXCHANGE—Wanted good Botanical Sections. Will give a packet, of which I have six different, of Micro-material from New Zealand for each slide.—W. A. GAIN, Tuxford, Newark

EXCHANGE—Coleoptera—Having undertaken the formation of a type collection of British Coleoptera for the local museum here, I earnestly appeal to coleopterists for spare specimens of any common species. Parcels will be thankfully received and postage paid, to be addressed C. E. STOTT, Hon. Curator Ento. Section, Manchester Road, Bolton-le-Moors.

EXCHANGE—Duplicates—Artaxerxes, Velleda, Sylvinus, Mundana, Fulva, Conigera, Fasciuncula, Furuncula, Arcuosa, Macilenta, Protea, Chrysitis, Dilutata, Caesiata, Albulata, Ocellata, Fulvata, Mensuraria, Lutealis, and Rubiella.—R. ADIE DALGLISH, 21 Princes Street, Pollokshields, Glasgow.

EXCHANGE.—Giving up collecting; will exchange British Bntterflies and Moths for Birds Eggs: (exchange lists.)—HERBERT PYBUS, 19 Pendrill street, Beverley road, Hull.

DUPLICATES.—Ægon, Subnotata*, Comitata*, Sobrinata*, Flavago*, Augur*, Baia*, Nanata*, Cuculatella*, Semele, Lubricepeda*, Repandata*, Vinula*, Bucephala*, Scolopacina*, Persicariæ*, Triangulum*, Festiva*, Typica*, Chenopodii*, Cribrella*, Flammealis*, H. lineola (fair). Desiderata.—Very numerous.—H. J. TURNER, 13, Drakefell Road, Hatcham, S.E.

DUPLICATES.—Salmacis, Artaxerxes, Alsus, Megæra, Mendica*, Villica*, Æsculi, Trepidaria, Pinetaria, Mundana, Cæsiata, also a fine pair of A. Sabellæ*.—T. MADDISON, South Bailey, Durham.

DUPLICATES.—Many Continental Butterflies in fine condition.—T. MADDISON, South Bailey, Durham.

EXCHANGE.—Botanical slides wanted. Mounted sections &c., suitable for class work. A packet of good unmounted material from New Zealand will be given in exchange for each slide.—W. A. GAIN, Tuxford, Newark.

British and European Lepidoptera wanted, especially noctuæ, will give in exchange fine North American species.—Address: CHAS. S. WESTCOTT, Merchantville, N.J., U.S.A. Box 167, Camden Co.

TO CORRESPONDENTS.

Title page and Index to Vol. I. will be given with the January part.

Conchological section.—Mr. Cockerill having sailed for Jamaica, this section is temporarily suspended. Communications in the meantime to be sent to the Editor.

Mr. G. A. Lewcock, 73, Oxford Road, Islington, N., Hon. Sec. City of London Ento. and Nat. Hist. Society, represents the Magazine in London, and conducts the section of Coleoptera.

CHANGE OF ADDRESS.

THOS PORTGATE *from* 17 Lowther Street *to* 18 Cecil Street, Carlisle.

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LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY, Free Library, William Brown St., Liverpool. Next Meeting Monday, December 14. Paper: "Hymenoptera Aculeata," by Willoughby Gardner, F.R.G.S.

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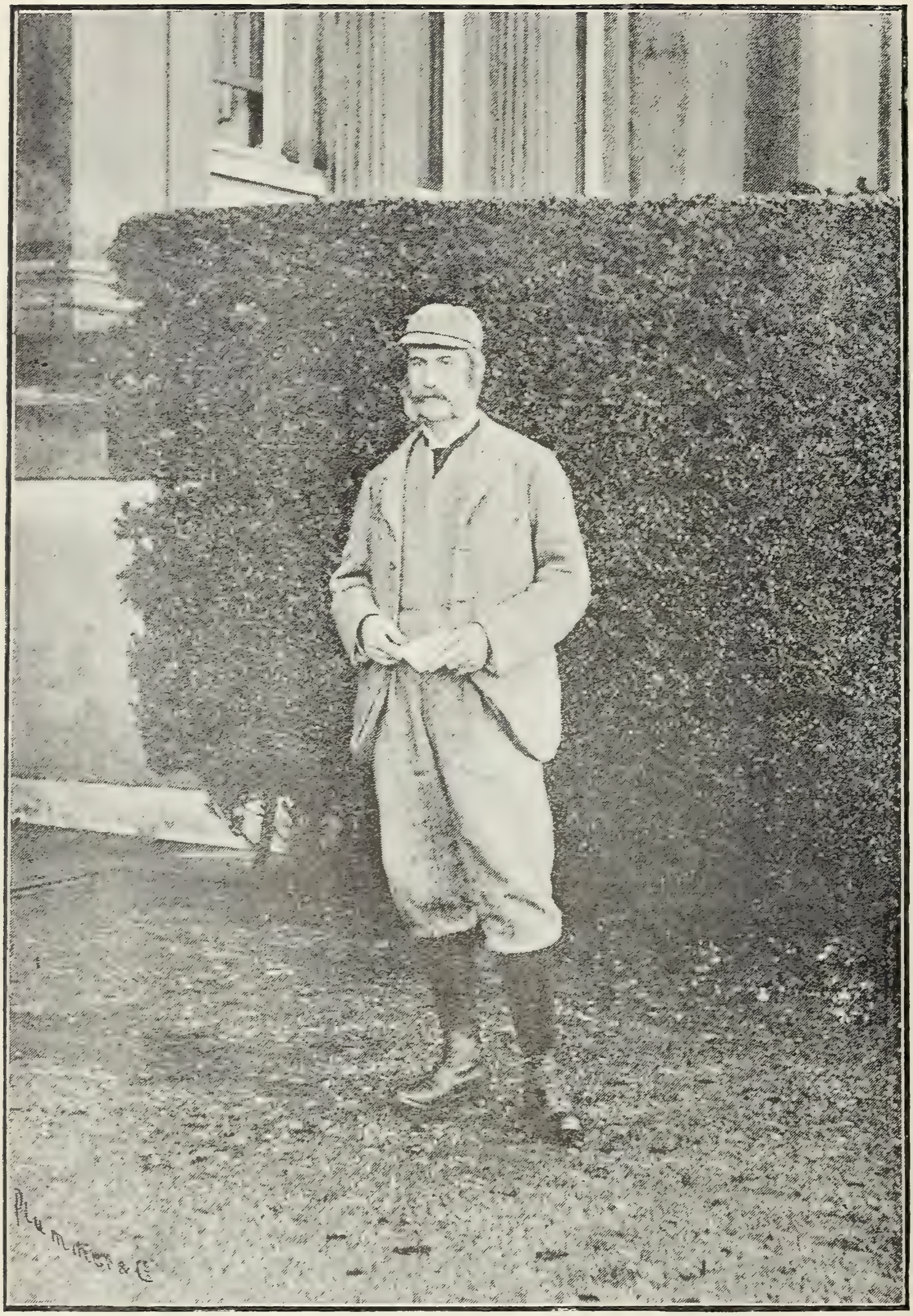

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VOL. II.

WICKEN FEN AND DISTRICT IN 1891.

G. T. PORRITT, F.L.S., F.E.S.

For many years Wicken Fen has been one of my favourite collecting localities, and during the last thirteen years I have probably made more Entomological expeditions to it than to any other locality. I was there this year from August 5th to 19th, and a few gossipy notes on the outing may perhaps be not altogether uninteresting to the readers of the "British Naturalist." On my arrival I found that Mr. J. W. Tutt, of London, had already been doing good work there for more than a week; and the enthusiastic local collectors Messrs. Albert Houghton and Solomon Bailey had been busy among the Fen specialities for some time. As at Askham Bogs this season, *Collix sparsata* had been out in unusual abundance; in both these widely separated localities it has occurred in profusion this year, and was constantly getting into our nets almost quite up to the end of our stay at Wicken, though the specimens were then of course, all very much worn. The beautiful *Nascia cilialis* too had been abundant, and odd ones were still coming to the lamps at night; and even *Meliana flammea* and *Macrogaster arundinis* were barely over. *M. arundinis* is now however much more plentiful in the Chippenham than the Wicken Fen. Chippenham Fen is some four or five miles from Wicken and very different in many respects in its character, being interspersed and surrounded with small woods and plantations; whereas Wicken Fen has only a comparatively few scattered bushes upon it. The fen herbage too varies a good deal in the two fens. At Chippenham this year, Mr. Farren, of Cambridge took some forty to fifty *M. arundinis* in two nights, whereas at Wicken, in the same time six or eight specimens would have been considered a good take. Chippenham too is the fen where *Plusia orichalcea* has been taken so freely of late years, and seemed to have been as abundant this year, as at any time since it was first turned up there in 1882. This species has never yet been taken at Wicken, although its food plant, *Eupatorium cannabinum* grows in abundance in both fens. In June, as I found last year, the very pretty *Bankia argentula* also occurs in plenty in the drier parts of Chippenham, but does not seem to occur at Wicken. On the other hand Wicken has its species which seem to be absent from Chippenham, notably *Papilio machaon*, which is still always abundant at Wicken. *Lobophora sexalisata* had been plentiful about the sallow bushes in Wicken Fen this year, and sugar in the long lane running parallel with the fen had produced *Aplecta advena* in good numbers. This species was over when we arrived, but its place was taken by a still better species, *Agrotis ravida*, which although in much fewer number, with close work, all the lepidopterists there managed to secure a fair series of beautiful specimens.

As most lepidopterists are aware, fen collecting is mostly done by light, for which purpose a large lamp is hoisted on a stout pole, and a big sheet fastened up by means of three other poles, behind it. The moths are attracted by the light, and often settle either on the glass of the lamp or on the sheet, unless they are prevented doing so by the stroke of the collector's net. A sheet is not absolutely necessary, but it is a great assistance, and moreover serves the purpose of keeping off the cold wind from the collector, which wind is sometimes one of the greatest nuisances he has to contend with. This year however "sugar" proved so attractive in the fen that it was impossible to give proper attention to the lamps at the same time, and they had to be left for hours. The lamps of course attract a great many species which never come to sugar, among which the big *Lasiocampa quercifolia* was a common visitor, and the male of *Odonestis potatoria* varying much in quantity of dark marking, equally so. Curiously, *Chelonia caja* which on a previous visit representing the same time, was so abundant as to be a nuisance, was not seen at all. The second brood of its small relative *Arctia fuliginosa* was a not unfrequent visitor, and very fine specimens they were indeed. *Nudaria senex* and *Lithosia griseola* were constant visitors, and an occasional var. *stramineola* of the latter insect occurred. The local *Nonagria hellmanni* was a welcome and not uncommon species; and late one night, to our astonishment, a fine example of *Phytometra ænea* came, a species we never even saw during the daytime. With them occurred a good variety of Geometræ, Noctuæ, Pyrales and Tortrices in greater or lesser numbers.

But it was on the "sugar" patches that most insects could always be seen at one time, and some evenings the numbers were astonishing.

The great bulk of them were however extraordinarily common, and I think I never anywhere saw so small a proportion of good insects in such a multitude of specimens. Probably in point of numbers *Leucania impura* took the lead, but during the earlier part of our visit *L. pudorina* was in full force, and had been perhaps still more abundant before our arrival; the local collectors said indeed that "bushels" of this species might have been taken, though it will be safer to accept that as exaggeration. Many of the specimens, especially the pink tinted ones, were very pretty. Very fine *Agrotis aquilina* also occurred, the difference between them and *A. tritici* being so marked even when on the sugar, that I cannot bring myself to regard this as nothing more than a form of that species. Two specimens of a noctua came to Mr. Tutt's sugar, which he shewed to me as *Hadena adusta*, but I at once expressed a doubt about their being that species, as not only was the locality very unlikely, but it was much too late for *adusta*, even in this inordinately late season. Mr. Tutt now believes them to be *Hadena satura*, and I believe he is right in his determination. *N. hellmanni* also visited sugar as much as it did the lamps, and *Apamea fibrosa* gradually increased in nnmbers all through our stay, becoming very common at the end, some beautiful forms were secured. A few *L. phragmitidis* were also taken, but this species was not so common as we expected to have found it. In the lane *Cosmia affinis* was abundant, many of them being very pretty. *Agrotis nigricans* were very fine, some being to our surprise, nearly as black as the Lancashire coast specimens. One morning was spent by Mr. Tutt and myself in an old barn in the village, working among the "rubbish" feeders; the place was alive with moths, and we probably saw more *Pyralis farinalis* there than either of us had ever seen in all our previous collecting experience. There were hundreds of them, and they sat in every conceivable position, dozens of them being evidently just as confortable perched head downwards on a spiders web, as on a barn rafter, the spiders apparently taking as little heed of them, as they of the spiders! Perhaps a still more abundant species was *Tinea misella*, of which any number might have been boxed. Several other ordinary barn species of *Tinea*, *Œcophora* and *Aglossa* occurred with them, but my own special search was for *Aglossa cuprealis*, of which I secured several fine specimens, but this species required looking for. One afternoon too, I collected a nice lot of larvæ of *Hecatera dysodea* from lettuce seeds in a garden in the village, and where some days previously Mr. Tutt had also made a good haul from the same plants.

Ordinary mothing on and about the fen, produced various species not obtained either by light or sugar, but it is now perhaps unnecessary to do more than enumerate some of those occurring in greater or less numbers, either in one way or another. The list will be very imperfect, as I made no written notes at the time, and can now only give such as I remember. I omit the names of those which have already been alluded to. *Papilis machaon*, the second brood was only just getting out, and larvæ of all sizes were still feeding; *Satyrus tithonus*, *Hepialis sylvinus* (not *H. velleda* as recorded in error by Mr. Tutt in "Entomologists Record," Vol. II, p. 163), *Nudaria mundana* *Epione apiciaria*, *Selenia illunaria*, second brood; *Hyria auroraria*, *Acidalia scutulata* and *A. bisetata*, strongly marked forms of both; *A. immutata*, abundant; *A. imitaria*, *Eupithecia subumbrata*, *E. assimillata*, about the gardens; *E. coronata*, *Coremia unidentaria ; Scotosia vetulata*, and *S. rhamnata*, had been very common, but were nearly over; *Cilix spinula*, second brood; *Acronycta megacephala*, *Leucania conigera*, *L. lithargyria*, *L. pallens*, *Nonagria despecta*, abundant; *N. fulva*, *Miana furuncula*, *M. arcuosa*, *Caradrina blanda*, *Tryphæna janthina*, very fine; *T. interjecta*, abundant; *T. pronuba* and *T. orbona*, fine forms of the latter; *Noctua augur*, *N. plecta*, *N. triangulum*, *N. umbrosa*, plentiful and very fine, I never before saw this species so generally good; *Epunda viminalis*, *Hadena pisi*, *Mania maura*, *Herminia cribralis*, *Paxaponyx stratiotalis*, *Ebulea sambucalis*, *Eudorea pallidulalis*, abundant; *Crambus selasellus*, *Chilo phragmitellus*, *Melia sociella*, *Halias chlorana*, larvæ feeding in the osiers; *Tortrix dumetana*, common and fine; *Aspis udmanniana*, *Sericoris fuligana*, not uncommon; *Orthotænia antiquana*, *Sciaphila chrysanthemana*, abundant; *Phoxopteryx paludana*, *Catopteryx expallidana*, a few; *Eupœcilia rupicolana*, *Phibalocera quercella*, *Gelechia populella*, *Elachista cerussella*, *Pterophorus monodactylus* and many others.

Only one journey was made to Chippenham Fen; three of us, Mr. R. McLachlan, F.R.S., (who had joined me at Wicken on the 11th), Mr. Albert Houghton and myself driving there on the morning of the 13th. Our object on the occasion was more to investigate the Neuroptera, Trichoptera, and Orthoptera (of which more later), than the Lepidoptera, and so but few of the last were noted. These included *Gonepteryx rhamni*, *Coremia quadrifasciaria*, *Notodonta dromedarius*, larvæ common; *Toxocampa pastinum ; Rivula sericealis*, abundant; *Retinia pinicolana*, and a number of micros bottled by Mr. Houghton. In the other orders of insects we were more successful this day than on any other during our expedition.

Next day the 14th, the same three of us drove to Tuddenham and back, a distance of fourteen miles each way, and a very enjoyable day it was. We had not been long on the ground before Houghton proved that plenty of larvæ of *Dianthœcia irregularis* were to be had.

Small ones were readily swept off the stems and capsules of *Silene otites*, but to obtain large and nearly full fed ones, another plan had to be adopted, the "wrinkle" for which we were indebted to Mr. Houghton. The method was to look for a stem of *Silene* on which the seed capsules (which are very small in *S. otites*) were well eaten, and then to scrape away the sandy earth at the bottom, when a fat larva would very often be found coiled at rest, waiting for evening to make the next ascent of the stem for his dinner. During the search for *irregularis* some half-dozen of the pretty larvæ of *Heliothis dipsacea* were also found; and sweeping among the surrounding herbage produced those of *Hecatera serena* rather commonly. Having secured some fifty *D. irregularis* larvæ, Houghton took us to another piece of waste ground further on, where the *Sisymbrium sophia* grew pretty freely; and from it we were soon busy boxing full fed larvæ of the local *Lithostege griseata*. Almost every plant seemed to have some on, and we had soon picked off a good supply. A short search was then made on the *Galium* for larvæ of *Anticlea sinuata*, but we were evidently too early for it this season, as only one very small one was found, which fed up rapidly into a beautiful creature; this is indeed one of the prettiest Geometer larvæ I have ever seen. Lepidopterous imagines were not much worked for. *Satyrus tithonus*, *Lycæna alexis* and *L. agestis* were common; and a few *Aspilates citraria* were disturbed with the sweeping; *Pterophorus lætus* also got into the net by the same means. Mr. McLachlan returned to London on Saturday, the 15th, and on Monday I went over to Cambridge to join Mr. Tutt and Mr. W. Farren in a hunt for *Bryophila impar*. We searched the old walls well, but only three or four *impar* rewarded our efforts, one only falling to my own take. A few *B. perla*, including a fine dark form occurred with them. Getting tired of the slow work we spent the afternoon looking over Mr. Farren's cabinet, until it was time for Mr. Tutt to go on to London, and for me to return to Soham, which is the railway station for Wicken.

My own chief object however, on this visit to Wicken, was to investigate the Neuroptera, Trichoptera and Orthoptera of the locality, and it was on account of the first two of these orders that Mr. McLachlan joined me for the several days. Our special search was for *Erotesis baltica*, a trichopteron of which only some half-dozen specimens have been taken in Britain as yet, and all, except one in the Norfolk fens, at Wicken Fen. When Mr. McLachlan arrived, I had one very fine specimen on my setting boards, taken soon after my arrival at Wicken, and unfortunately all our efforts failed to turn up another. Perhaps we were too late for the species, but quite as likely, the very unfavourable weather we experienced accounted for our non-success. It is a very delicate species, and no doubt its habit, like those of its allied genera, is to fly gently over the ditches at sunset, in the calmest weather. As it was, all the time we were there, it was either wet, or a much too strong wind was blowing on the fen to allow any of this group of insects to fly. Even *Leptocerus aterrimus* was only very occasionally seen on the wing, though plenty could be swept out of the herbage. Next to *E. baltica* perhaps the most interesting species was the dragonfly *Pyrrhosoma tenellum*, which was found commonly on the ditches on Chippenham Fen on the only visit we made there, on the 13th. Curiously it was not seen on Wicken Fen at all, though I had found it there the previous year, up to which time it had only occurred in Britain on heaths near Weybridge, and one or two other similar South of England localities. Its usually common relative *P. minium* was not seen at all.

The district altogether proved very unsatisfactory for Neuroptera and Trichoptera; indeed the paucity of species in a locality so exceedingly promising in appearance was most extraordinary; and although the weather was certainly much against us, we were reluctantly forced to the conclusion that many of the species we naturally expected in such a locality were not there at all. The few species for which Tuddenham is given were taken on the 14th. When the locality is not stated the record refers in all cases to Wicken.

NEUROPTERA.

Sympetrum striolatum, *S. sanguineum*, not uncommon, but not nearly so abundant as I found it on Wicken Fen in August two years previously. *Æschna grandis*, common, and often seen "hawking" for insects at dusk, a habit, I believe, not indulged in by any other British dragonfly. Several specimens of another *Æschna* probably *cyanea*, were seen but not captured. *Lestes sponsa*, common on both Wicken and Chippenham Fens; *Ischnura elegans*, common; *Agrion pulchellum*, common both at Wicken and Chippenham Fens; one or two others of the common Agrions, I think, also occurred, but as none were boxed I cannot say with certainty which they were. *Pyrrhosoma tenellum*, common on Chippenham Fen; *Nemoura* ? one species common at Chippenham, but I am a little doubtful as to which it is. *Raphidia xanthostigma*, Chippenham Fen; *Hemerobius marginatus* and one or two other commoner species of the genus occurred at Chippenham; *Chrysopa flava*, *C. vittata*, *C. alba*, *C. tenella*, and *C. aspersa*, all at Chippenham; *C. flavifrons*, not uncommon at Wicken.

TRICHOPTERA.

Phryganea varia, abundant and variable; *Agrypnia pagetana*, common; *Colpotaulius incisus*, common; *Grammotaulius nitidus*, not uncommon on Wicken Fen ; *Glyphotælius pellucidus*; *Limnophilus rhombicus*, common but the specimens small ; *L. flavicornis*, abundant ; *L. marmoratus*, probably the most abundant species seen ; *L. stigma*, *L. vittatus ; L. auricula*, Tuddenham ; *L. hirsutus*, in the fens, and I think also at Tuddenham ; *Silo pallipes*, Tuddenham ; *Molanna angustata*, common ; *Leptocerus aterrimus*, abundant but the specimens small ; *Mystacides longicornis*, *Erotesis baltica*, one specimen only on Wicken Fen; *Œcetis lacustris*, not uncommon; *Holocentropus picicornis*, abundant; *Tinodes wœneri*, Tuddenham; *Lype phœopa*, several at Tuddenham.

ORTHOPTERA.

Stenobothris viridulus, common, I believe, though some of the specimens captured as this species were the green var. *mollis* of *S. bicolor*, which unless captured might readily be mistaken for it. *S. elegans*, not uncommon at Wicken, and I think also occurred at Tuddenham; *S. bicolor*, abundant at Wicken, and equally so at Tuddenham ; it was exceedingly variable in colour, and the var. *purparesceus* was common at Wicken, and probably the green var. *mollis* equally so. *Gomphocerus maculatus*, at Wicken and Tuddenham. *Odontura punctatissima*, Mr. McLachlan beat out a nice specimen in "the lane" at Wicken. *Mecanema varia*, beaten out of the trees in plenty at Chippenham Fen. *Xiphidium dorsale*, in abundance and of all sizes in Chippenham Fen; also on Wicken Fen, but less commonly.

Huddersfield, *Nov. 20th, 1891.*

NOTES FOR BEGINNERS.—MICRO LARVÆ FOR THE MONTH.

GEO. ELISHA, F.E.S.

January is the month of all others in which we have the most time on our hands. There is really nothing to do now in the way of larvæ collecting but what can be put off till next month if need be, so it is as well to take advantage of the lull, to look through and arrange the notes we have roughly jotted down during the busy time, examine, and place in our cabinets the captures of the season, and distribute the surplus specimens among our friends and correspondents, never forgetting to act in a liberal spirit in all such matters, for although we may occasionally meet with a poor return for our liberality, we shall find as time gone on, we become acquainted with a circle of correspondents all acting in the same generous spirit.

We have now the opportunity to think over what has been done during the past year, to increase our knowledge of the habits and early stages of various species, not only by our own observations, but those of others also, when perhaps a suggestion put forth, or a slender clue, may lead us to work out the life-history of one of the many species we are as yet unacquainted with; and again it is necessary to arrange our plans for the coming season, at the end of which we shall be fortunate if we have accomplished half we set ourselves to do, for it is really astonishing what a very little, we, individually, are able to add to the present knowledge of life-histories and habits, during any one season, let our exertions be what they may; but to the steady, persevering, enthusiastic worker, a reward is sure to come now and then, to repay him in a measure for the trouble he has taken.

We occasionally have some bright, mild days during this month, that set us longing to get away to the country, if only for a ramble, at such times it is far better to have an object in view, than to wander aimlessly about, and as there is plenty to do this month in the way of collecting if one is so inclined, it may be well to mention a few of the larva that may now be taken, so that our journeys may become both interesting and profitable, for as we wander along the quiet lanes, the wild plants, many of which struggle on and keep green during the winter months, remind us of the pleasant days we have passed searching among the leaves, and finding the larvæ of many species which at that time were new to us, and very acceptable.

As we pass along, the withered-looking stems of the hedge stachys (*Stachys sylvatica*) remind us we must search some of them, for we may perhaps find the larva of *Ephippiphora nigricostana*; and in the chalk pit yonder we can see some fine Teasles, we must cut a big bagful of these heads, for they contain the larva of *Eupœcilia roseana* which eat through the seeds, and *Penthina gentianana* will be found in the centre of the heads feeding on the pith; and now we will search well the Oak trees in the adjoining wood, and collect all the oak galls and apples we can conveniently reach, for we may breed from them fine specimens of *Ephippiphora obscurana*, *Heusimene fimbriana*, *Coceyx splendidulana*, *Œcophora lunarella*, and many others, and at the same time search the ground under spruce fir trees, for those cones that are mis-shapen, for it is these only that contain the larva of *Coccyx strobilana*, and while wandering about these large old woods it is as well to keep a good look out for that large fungus *E. bolitus*, generally found growing on Beech trees, for we may be fortunate enough to find it tenanted by the larvæ of *Scardia boleti*, if so, the fungus must not be taken now, but the spot marked down and another journey taken for it about the first week in May, when we shall be pretty sure to breed the species. We must also examine dead and decaying wood, rotten sticks, and under rotten bark, for in such places we shall find the larvæ of *Dasycera sulphurella*, and many species of *Œcophora*, and under Oak trees we may still find many mined leaves containing pupæ of the rarer *Lithocollididæ*, the larvæ of which only feed in the leaves of the upper branches of the trees, and in the leaves of the bramble we shall occasionally find the larvæ of *Nepticula aurella* making their long tortuous galleries.

We may still find many of the larvæ feeding in stems and roots of plants that were to be taken in November and December, so that we can find plenty to occupy all the spare time we may have between the usual occupation of overhauling our cabinets, and all the numerous duties connected with our favourite study appertaining to this particular time of year.

Shepherdess Walk, City Road, N.

Reports of Societies.

ENTOMOLOGICAL SOCIETY OF LONDON.

December 2, 1891—The Rt. Hon. Lord WALSINGHAM, M.A., LL.D., F.R.S., Vice-President, in the chair.

Mr. Henry A. Hill, of 132, Haverstock Hill, Hampstead, N.W.; Mr. Frank Nelson Pierce, of 143, Smithdown Lane, Liverpool: and Mr. Carleton F. Tufnell, of Greenlands, Border Crescent, Sydenham, S.E., were elected Fellows of the Society.

Dr. D. Sharp exhibited and commented on a number of photographs of various species of *Lucanidæ* belonging to Mons. Rene Oberthür.

Mr. C. G. Barrett exhibited a number of specimens of local forms and varieties of Lepidoptera, taken by Mr. Percy Russ near Sligo, including *Pieris napi*, var. near *bryoniæ; Anthocharis cardamines* (male), with the orange blotch edged with yellow, and yellowish forms of the female of the same species; very blue forms of *Polyommatus alsus;* males of *P. alexis*, with the hind margin of the under wings spotted with black, and very handsome forms of the female; also varied series of *Agrotis cursoria*, *A. tritici*, *A. valligera*, *Hydrœcia micacea*, *H. nictitans*, *Epunda lutulenta*, *Hadena protea*, *Odontoptera bidentata*, *Cidaria immanata*, *C. testata*, *C. pyraliata*, and *Boarmia repandata*.

The Rev. S. St. John exhibited two specimens of *Lycæna argiades*, taken in Somersetshire by Dr. Marsh in 1884; three specimens of *Deilephila euphorbiæ*, bred from larvæ found feeding on *Euphorbia paralias* on the Cornish coast in September, 1889; and a series of various forms of *Anchocelis pistacina*, all taken in a garden at Arundel. Lord Walsingham, Mr. Barrett, and Mr. McLachlan took part in the discussion which ensued.

Mr. Jenner Weir exhibited and made remarks on two dark specimens of *Zygæna minos* which had been caught by Mr. Blagg in Carnarvonshire. He remarked that the specimens were not representatives of complete melanism, and suggested that the word "phæism"—dusky—would be a correct word to apply to this and similar departures from the normal coloration of a species

Mr. C. J. Gahan exhibited specimens of the common "book-louse," *Atropos pulsatoria*, Fabr., which he had heard making a ticking noise similar to that made by the "death-watch" *(Anobium)*.

Mr. B. A. Bower exhibited the following rare species of Micro Lepidoptera:—*Spilonota pauperana*, Frol.; *Gelechia osseella*, Stn.; *Chrysoclysta bimaculella*, Haw.; and *Elachista cingilella*, Fisch. Lord Walsingham and Mr. Tutt made some remarks on the specimens.

Mr. R. Adkin exhibited a variety of *Anthocharis cardamines*, and one specimen of *Sesia scoliæformis* bred from a larva found at Rannoch.

Mr. G. T. Baker read a paper entitled "Notes on *Lycæna* (recte *Thecla*), *Rhymnus*, *Tengstræmii*, and *Pretiosa*." A discussion followed, in which Lord Walsingham, Capt. Elwes, and Mr. Baker took part.

Mr. F. Merrifield read a paper entitled "The effects of artificial temperature on the colouring of *Vanessa urticæ* and certain other species of Lepidoptera." The author stated that both broods of all three species of *Selenia*, *Platypteryx falcataria*, *Vanessa urticæ*, *Bombyx quercus* and var. *callunæ*, and *Chelonia caja* were affected by temperature in the pupal stage, the lower temperature generally producing the greater intensity and darkness of colour; some of the *Vanessa urticæ* made a near approach to the var. *polaris* of Northern Europe. A long discussion ensued, in which Mr. E. B. Poulton, Mr. McLachlan, Prof. Meldola, Mr. Barrett, Mr. Jenner Weir, and Lord Walsingham took part.

Mr. W. Bateson read a paper entitled "On the variation in the colour of the cocoons of *Eriogaster lanestris* and *Saturnia carpini*," and exhibited a large number of specimens in illustration of the paper. Lord Walsingham congratulated Mr. Bateson on his paper, and on the intelligent care and method shown in his experiments, and said he was glad to see that at Cambridge there was an entomologist ready to enter this interesting field of investigation, and perhaps at some future day to contest the palm with Mr. Poulton as representing the sister University of Oxford. He had noticed the larvæ of *S. carpini*, if left in a box with dead food, and probably partially starved, made a light-coloured cocoon; but, that, when the cocoon was made under natural conditions, on living food-plants on the moors, it was of a dark colour. Mr. Poulton, Prof. Meldola, Mr. Bateson, and others continued the discussion.—H. Goss and W. W. FOWLER, *Hon. Secs.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

November 26th, 1891.—W. H. Tugwell, Esq., President, in the chair. Mr. J. A. Cooper exhibited five specimens of *Arctia caja*, the red colour of the inferior wings being replaced by yellow; he remarked that from some thousand larvæ collected near Wanstead Flats, all of which had been fed under normal conditions, he had reared seven of this form, all of which emerged on the same day; as far as he could say there were no atmospheric conditions which would account for the variation. It would be noticed that one of the specimens had a blackish fringe to the inferior wings, Messrs. Tugwell, Carrington, and Tutt made some observations on specimens of this species occasionally having the fringes and antennæ of a blackish colour. Mr. R. Adkin a specimen of *Sesia scoliæformis*, bred at Rannoch from a larva found there, and he remarked on the difficulties attending the rearing of the species. Mr. Tugwell thought the specimen was smaller than those that were obtained from Llangollen and he suggested "assembling" as a method of obtaining males of the species as *S. sphegiformis* and *S. culiciformis* were taken in this way. Mr.

Carrington described the mode Mr. Nicholas Cooke adopted to take this species and also the plan Mr. Salvedge followed: he also said the Rannoch specimens were always smaller than the Welsh ones. Mr. R. Adkin also exhibited a specimen of *Euchloë cardamines*, taken at Hayward's Heath, having a distinct V shaped mark below the discoidal spot on the under side of the primaries. Mr. C. G. Barrett remarked on this form of variation as occurring in so many species, particularly the genus *Oporabia* and in *Setina irrorella*, the V mark was caused by the union of the black scales on the two divisions of the median nervure. Mr. C. Fenn pointed out that in the *cardamines* shewn, the black scales were not on the division of the nervure. Mr. Hawes, a living example of *Polyommatus phlœas*, bred from ovum deposited 28th August, the larva pupating October 2nd, and after being kept in a high temperature emerging 25th inst. Mr. Hawes also stated that he had been endeavouring to obtain ova from various species of butterflies by lamp-light, and had succeeded with *megæra* and *napi*. Mr. R. South, a series of *Liparis monacha*, var. *eremitor*, bred from French larvæ, and remarked it would be interesting to ascertain the origin of this form, he had never taken it in England although he was told it occurred in the New Forest. Mr. C. G. Barrett was of opinion that this suffused form did not occur in the New Forest, but it was found in the Midlands. Mr. Tutt said that Miss Kimber had bred an exceedingly dark one from the New Forest, and Mr. Dobson had got a fine series of banded forms from the same locality. Mr. Tugwell thought in Mr. South's specimens the darkening arose from the ground colour being darker, whereas in English specimens it was the thickening of the black scales that caused the variation. Observations were made by members on collecting butterflies on dull days at rest, the Lycænidæ, Hesperidæ, Argynnis, *Papilio machaon* and *Melitæa athalia*, were specially alluded to, Some remarks were made as to obtaining all the information possible with regard to the reported capture of *Polyommatus virgaureæ* near Seaford.

December 10*th*, 1891.—The President in the chair. Mr. C. G. Barrett exhibited and remarked on a number of species collected by Mr. Russ in the West of Ireland, in particular referring to the prevalence of pale and dark forms of so many species occurring together in a locality where the climate was an exceedingly wet and stormy one; among others, he instanced several species of *Agrotis*, *Hydrœcia micacea*, *H. nictitans*, &c., there were also specimens of *Lycæna icarus*, having black spots in the hind margin, and examples of *Pieris napi*, approaching *bryoniæ*. Mr. South said that the particular form of *L. icarus*, occurred in the Isle of Wight and at Perthshire. Mr. Weir referred to the *P. napi* and said he had received the same form from Cavan. Mr. Fenn, in reference to light and dark forms of certain species occurring together, said he thought wherever a variable species occurred, the extremes would be found. Mr. Tutt said this was well known, but, in his opinion, there was generally a particular characteristic for each locality, although the whitest and palest forms of *A. tritici* occurred at Deal, yet some that were almost black were fouud;the majority of the specimens showed a tendency to run of a bluish tint, while those taken by Mr. Russ showed a tendency to run brown; other instances occurred with *Tæniocampa instabilis*, *Noctua castanea*, var. *neglecla*, and *Xylophasia polydon*. Mr. R. Adkin exhibited a variety of *Pieris napi*, ♀ in which the usual spots and apical patch of the forewings were united to form an almost continuous sub-marginal band; also a series of *Petasia nubeculosa*. Mr. S. Edwardes, among others, exhibited *Ornithoptera brookiana*, from Borneo, and Mr. Weir remarked that until lately the species had alone represented a section of the genus but an allied species had been discovered in Palawar, thus affording a further contribution to the probability that the fauna and flora of that island would prove to be more Bornean than Phillipine. Mr. J. H

Carpenter, a series of *Plusia festucæ*. Mr. Tugwell, a box of Lepidoptera received from Mr. Reid, and called attention that there was nothing of any importance among them; he, however, had heard that Mr. Reid had taken *Retina duplana*, Hb., and one of the Pterophori, which he could not identify. The larvæ were found feeding underneath the leaves of Ragwort. Mr. Barrett said that the first specimens taken were referrable to *turionana*, that *duplana* occurred earlier in the year, and since this had been pointed out, Mr. Salvedge and Mr. Reid had taken them. Mr. Tugwell also exhibited specimens of a dark *Eupithecia* from Paisley, with typical forms of *Eupithecia satyrata* to which species he thought they were referrable; many members differed from this opinion. The meeting closed with a discussion on the effects of heat and cold producing variation.—H. W. BARKER, *Hon. Sec.*

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

Thursday, Dec. 3rd, 1889.—Exhibits.—Mr. Boden, a specimen of *Rhodophœa terabrella*, taken some years ago at Box Hill. He stated that he had repeatedly worked the same ground, but no more were taken. With reference to the species, Mr. Tutt stated that it had been taken at various localities in Norfolk and Suffolk, and that the larvæ fed on the terminal shoots of the Scotch fir. Dr. Buckell, a bred series of *Oporabia dilutata* from Chingford and Hampshire. He pointed out that the distinctly banded form was commoner among the latter, but the Chingford specimens and most of the London forms, were chiefly unicolorous; Mr. Simes, *Amphidasys betularia* from Clapton, with more black markings than the usual form, melanic varieties of *Noctua xanthographa* and *A. cursoria* and *A. valligera*; Mr. Clark, a male specimen of *Fidonia atomaria* from Haywards Heath, entirely dark sooty brown in colour; also *Erebia cassiope* with a bleached mark on one wing.

Coleoptera:—Mr. Heasler, *Choleva nigricans*, taken under dead leaves at Highgate and Wimbledon; Mr. Riches, *Necrophorus ruspator*, *Dorcus paralellopipedus*, *Serica brunnea*, &c.; Mr. Pearson, living larvæ of *Dermestes lardarius*.

The gentlemen who were nominated at the last meeting as officers for 1892 were unanimously elected.

The Secretary read the Report for 1891, in which he said that notwithstanding several difficulties under which the Society had been working, the progress was good, this being especially the case with the exhibits and communications. Mr. Tutt proposed that this report be adopted, with a vote of thanks to the Secretaries. Mr. Huckett seconded the resolution and it was carried.

The President then read his annual address. He said that although diverse in many things, we all met here on a common footing, as students, and that all should be ready to learn. Although some were specialists, so closely were the various branches of Natural History connected, that it was impossible to devote attention to one order without knowing something of the others. He then spoke of the true recreative value of a pursuit such as the study of Natural History.

Dr. Buckell proposed that a vote of thanks be given to the President for his address and also to all the officers for their services during the past year. Mr. Hodges seconded this, and it was carried.

Mr. Bellamy stated that he had seen a specimen of *Smerinthus tiliæ* on 22nd Nov., being evidently one of an autumnal brood. Autumnal emergences were also noted of *Stauropus fagi* and *Abraxas ulmata*.

Thursday, Dec. 17th, 1891.—Pocket Box Exhibition, held at the Society's new room, at 33, Finsbury Square. Exhibits.—Mr, Allbuary, a perfect albino specimen of *Epinephele janira* taken at Dover in 1889, and fine varieties of *Arctia caja* and *A villica*; Mr. Cooper, black forms of *Boarmia repandata* from Sheffield, and banded specimens (var. *conversaria*) from the New Forest; Mr. Machin, Scotch forms of *Gortyna flavago* with southern specimens for comparison, the former being much darker; also *Eupithecia helveticaria, Crambus myellus, Coccyx ustomaculana* and *Œcophora stipella;* Dr. Buckell, a long series of *Triphæna pronuba* from the London district, showing much variation, the most noticeable forms being those with dark anterior wings and light stigmata; Mr, Quail, life histories of many Geometræ, including *Scotosia certata, Hemerophila abruptaria* and *Phorodesma smaragdaria;* Mr. Gates, living larvæ of *Melanippe montanata,* and cocoons of *Dicranura vinula;* Mr. Battley, a number of microscopic slides, illustrating the anatomy and structure of various insects; also on behalf of Mr. J. Collins, of Warrington, a beautiful series of *Lithosia sericea,* taken in the Manchester district; Mr. Simes, variable forms of *Smerinthus populi,* also bleached forms of *Epinephele janira* and *Cænonympha pamphilns*; Mr. Southey, *Acronycta alni,* and a specimen of *Deiopeia pulchella* from Southend; Mr. Prout, specimens of *Cosmia trapezina,* bred singly, and so having no chance of obtaining animal food, these specimens were all much smaller than usual. He also exhibited some fine bred forms of *Melanippe subtristata (sociata)*; Mr. Hill, a number of species from Rannoch, including *Petasia nubeculosa, Cidaria immanata,* and dark forms of *C. populata* and *Melanthia rubiginata*; Mr. Clark, *Rumia cratægata* without the brown markings, a smoky variety of *Abraxas ulmata, Stilbia anomala* from Aberdeen, and the dark var of *Argynnis aglaia* previously exhibited; Mr. Riches, a series of *Abraxas grossulariata* bred from Hornsey larvæ; also in Diptera, *Tabanus bovinus* and *Asilus crabroniformis*; in Orthoptera, *Phrasgonura viridissima*; and in Hymenoptera, *Trichosoma lucornm*; Mr. Elliman, a large number of species taken in 1891 at Tring, Herts., including *Neuria saponariæ, Luperina cespitis, Cirrhœdia xerampelina* and *Noctua rhomboidea*; also the following Coleoptera, *Myllaena dubia, Coryphium augusticolle, Phlœophlus edwardsil,* and *Epitrix atrope*; Mr. Heasler, cases of aquatic Coleoptera and Staphylinidæ; Mr. Lewcock, a number of good Coleoptera from Eynsford, Kent, including *Cryptocephalus lineola, Cistela luperus, Otiorhynchus tenebricosus* and *Toxotus meridianus*; Mr. Milton, *Pachyta octomaculata, Aepus marinus* and *A, robinii*; in Diptera *Stratiomys riparia, S. potomida, Gastrophilus nasalis,* and *G. equi*; in Hymenoptera, *Sirex gigas, Ephialtes tuberculatus* and *Vespa rufa*; in Orthoptera, *Phrasgonura viridissima* and *Ectobius lapponica;* in Neuroptera, *Osmybus chrysops* and *Baetis fluminum;* and in Hemiptera, *Ranatra linearis.* He also exhibited a specimen of *Eubolia palumbaria* captured by a plant of the Sundew *(Drosera rotundifolia),* and a piece of polished stone, the markings of which resembled a landscape, with trees and hedges.—G. A. Lewcock and E. Harris, *Hon. Secs.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.

The monthly meeting was held on Monday, Dec. 14th. The president (S. J. Capper, F.L.S., F.E.S.), in the chair. Mr. Willoughby Gardner, F.R.G.S., read a paper, entitled: "A preliminary list of the Aculeate hymenoptera of Lancashire and Cheshire, with notes on the habits of the Genera,"* illustrating his remarks by specimens of the various species, cases containing nests and "life histories," &c, The president exhibited a type collection of Hymenoptera; Miss Tomlin, of Chester, a collection of Hymenoptera and specimens of *Hylastes opacus*, Er.; *Trypodendron domesticum*, L., and *Myelophilus piniperda*, L.; Mr. Newstead, nests and specimens of *Bombus pratorum*, *Megachite circumcinta*, *Andrena nigroœnea*, *Colletes cunicularia*, genitalia and leg of *Crabro palmipes*; Mr. Stott, a specimen of *Chœrocampa celerio*, on behalf of Mr. H. S. Clark, of Douglas, where it was captured this summer; Dr. Ellis, a collection of Coleoptera made in the Spanish Pyrenees; the Library and Museums' Committee, nests and specimens of British and Foreign Hymenoptera; and by Mr. J. T. Green, collection of Hymenoptera.—F. N. PIERCE, *Hon. Sec.*, 143 Smithdown Lane, Liverpool.

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*This valuable paper will appear in the Magazine, we therefore omit the summary. —Ed., B.N.

GUERNSEY NATURAL SCIENCE SOCIETY.

The usual monthly meeting of the Guernsey Society of Natural Science and Local Research, was held at the Guille-Allès Library on 9th Decembers, the chair being taken by Mr. E. D. Marquand, in the absence of the president, Mr. John Whitehead.

Thirteen new members were elected and two other members were also proposed.

Mr. Lesbirel presented, through Mr. A. Collenette, a fine specimen of a "stone muller," which he recently found at Le Bourg, Forest parish, near the site of a former cromlech. As an evidence of the mildness of the season it was remarked that on Sunday, 6th, numbers of *Piezodorus incarnatus* were noticed by Mr. Luff on the furze bushes in St. Andrew's; also honey bees and wasps on the flowers of the ivy, and 25 species of flies, many in great abundance, were counted on tree trunks and ivy blossoms. During the previous week several cockchafers (*Melonontha vulgaris*) were seen flying about in Ville au Roi and King's Road.

Mr. Luff communicated some interesting notes on the occurence in Devon of the of the Guernsey Tiger *(Callimorpha hera)*. He also referred to the introduction into Guerney of *Helix pisana*, the shells of which are now found in large quantities under the shelter of the sea wall at Vazon Bay, and also at the Vale, near the Castle. The only English localities of these shells are Tenby, in South Wales, and St. Ives, in Cornwall.

Mr. A. Collinette read some very interesting notes upon the methods of fertilization by a small fly, of one of orchids, *Aristolochia clematis*, or birthwort, which is common in England upon old ruins, &c. The very complex and ingenious means by which cross fertilization is secnred in this small and inconspicuous flower was lucidly explained by Mr. Collenette, who further illustrated it by means of a couple of diagrams which he had drawn, showing greatly enlarged sections of the flower.

A very interesting discussion followed, in which many of the members took part.

Mr. Sharp also handed in a short list of Guernsey proverbs, as a contribution to to the newly-commenced Folklore Section. This led to an interesting conversation upon local proverbial expressions, several further examples of which were quoted by members present.—W. A. LUFF. *Hon. Sec.*,

Mollusca.

A FEW NOTES ON FRESH-WATER SHELLS.

BY W. A. GAIN.

Some months ago I saw the opinion expressed that the var. *labiosa* of *Limnœa peregra* was produced by the animal, during shell-growth, crawling over a hard surface, mud which had hardened during a previous drought and afterwards been overflowed on the filling of the ponds by succeeding rain. I cannot find the article, so am unable to refer the reader to it, or to give the name of the writer, but last year some facts came under my notice which tend to confirm this opinion. I must first state that what I term my aquarium is not quite in the ordinary style, it consists of a stone trough, containing about 130 gallons, placed in a shaded part of the yard, and about two-thirds covered by a massive flag-stone; it is never cleaned out, and contains a varied assortment of animal and vegetable life, in fact I have endeavoured to produce as nearly as possible the conditions found in a natural pond. In this aquarium nearly half the number of full-grown specimens of both *L. peregra* and *L. stagnalis* were found to have expanded and refracted lips, attributable, I believe, to the hard sides of the trough which they delight to ascend, and browze on the plentiful herbage to be found there.

On one occasion, while watching an example of *L. peregra* floating shell downwards on the surface, with the foot very concave, I saw the animal extend its tongue and seize a minute portion of what looked like bread crumb, which floated just in the centre of the concavity, and convey it to his mouth.

VARIETIES.—Are we not suffering from a plethora of varietal names? By the naming of slight variations from the normal forms, many of which are so close that in a number of cases it is impossible to say to which var. a certain shell belongs, we are getting the nomenclature of our land and fresh-water mollusks complicated enough to puzzle a Philadelphia lawyer. A systematic weeding of our too abundant varietal names is a thing to be desired. Those names indicating well-marked variations from the type should be retained, as the use of them affords the readiest and most exact means of describing a shell. One of the worst of recent innovations is the introduction of names from continental sources for the different band arrangements. These are quite unnecessary as the old band formulæ convey the information much more clearly and exactly. Again, what good can be served by such terms as *fuliginosa* applied to a shell encrusted with extraneous material? Then there are vars. of *L. peregra* so nearly related that it seems hopeless to attempt to identify them by any written description. My list contains over fifty *vars.* and a score of synonyms. Surely a much smaller number would be quite sufficient to name all the variations worth recording of even the most variable of shells, especially as they nearly all refer to differences of form. Of *Helix nemoralis* I have a list of 79 vars., the variation takes place in many directions, that a considerable number of varietal names are required, as we have varieties of form, substance, size, colour of shell ground, band colour, and lip colour, besides a great many of the recently introduced names for band arrangements. The last are quite unnecessary for the reason previously given. These varieties might advantageously reduced to one-half, which could easily be done by omitting all names of the last class, together with a few others applied to closely related forms. Even with the abundance of named varieties mentioned it is quite impossible, as well as unnecessary, to give a definite name to every variety of shell. Mr. Taylor expresses similar sentiments in the following paragraph, quoted from the *Journal of Conchology*: —" Before commencing to describe and figure the various varieties " it is well to remind the student that almost innumerable minor " modifications or sub-variations of every variety may and probably " do exist, and that characteristic specimens, with all peculiarities " exact as the original shells for which the name was instituted, are " often extremely rare. I have therefore endeavoured in compiling " the descriptions of the various varieties to give the essential feature " and to eliminate such details as appeared to me to be individual " peculiarities, which might or might not be present in specimens " otherwise possessing the primary character."

Many of our first conchologists with whom I have corresponded take an entirely different view, and refuse to acknowledge any shell as belonging to a named variety which does not possess all the characteristics mentioned by the original describer, even rejecting form varieties because they differed in colour from the shells described. This does not seem to be the view entertained by most recent writers.

Tuxford, Newark, Dec., 1891.

GENERAL NOTES.

THE ROUGH-LEGGED BUZZARD IN GUERNSEY.—A fine specimen of the Rough-legged Buzzard *(Bute lagopus)* was shot at the Coutanches, Guernsey, on Saturday, 31st October, by Mr. R. L Spencer, and has been preserved for the Guille-Allés museum. It measured fifty-four inches across the wings. There appears to be no previous record of the occurrence of this rare bird in Guernsey, though we understand one was shot at Herm about ten years ago.—W. A. LUFF, Guernsey.

BOMBYX RUBI.—I was pleased a week or two ago in getting some larvæ of *B. rubi* to pupate, as I have never bred the species. I put them on the kitchen boiler, and half-a-dozen of them spun up immediately. Two were in such a hurry that they only made one coccoon between them.—L. S. BRADY, Mowbray, Sunderland. 9th December, 1891.

LARVÆ OF BRYOPHILA PERLA IN DECEMBER. –The first week in December I found the larvæ of the above species rather common on an old wall which was covered with lichens. They were about quarter of an inch in length, head shining black, slate colour along the back, sides striped with orange extending the whole length of the body. They were very active, crawling rapidly away when disturbed, although the day was very cold.—G. PULLEN, Derby.

VARIETIES OF AGROTIS ASHWORTHII.—Ithink I can safely say that I am done with *Ashworthii* now, seeing that the last came out three days ago. I have not got quite so many as I at one time expected to get, but quite enough for my own purposes. Most of the last batch of larva died off when nearly full fed, which was much disappointing. Among the imagines I have reared this Autumn by the forcing process described in the British Naturalist (Vol. 1, p, 263), are two distinct departures from the ordinary form. One of these has a well-defined broad black band on the inner margin, which reaches the stigmata and is broken up by them. The portion passing between them reaches the costa; the other portions shade off to the ground colour before reaching so far. Theother variety is very much suffused with darker scales making it almost entirely black or very dark grey, and showing no trace of the usual light ground colour. –L. S. BRADY, Sunderland.

Mr. Brady has sent me carefully executed drawings of these forms. A similar variety to that first described was in Mr. Gregson's collection when I saw it a few years ago, (I am speaking from memory of course). The suffused form is new to me and appears to be very fine.—ED. B.N.

REMARKS ON THE NOCTUA KNOWN AS CONFLUA OF TREITSCHKE.—From the report of the meeting of the City of London Entomological and Natural History Society, held October 7th, published in Brit. Nat., VI., p. 236, I quote the following, "*Festiva* and *conflua* were originally confounded by Newman, who figured small, moorland specimens of *festiva* as *conflua*, but the *specimens of conflua from Iceland*, *from which the species was named, were very different*, having narrower and more pointed wings." May I be permitted to say that the above statement is misleading and that the words I have italicised would never have been uttered by anyone who was acquainted with the actual facts of the case.

Those who desire to know where the insect came from to which Treitschke gave the name of *conflua* will obtain the information by referring to Duponchel' VII., p. 140, where it is stated that the insect in question was found in Hungary, in 1824, and sent by Treitschke to Boisduval under the manuscript name of *Apamea conflua.* At the time the insect came under the notice of Duponchel it had not been described or figured by any author, so adopting Treitschke's MS. name he figured and described it in the seventh volume, a continuation of Godart's "Histoire Naturelle des Lépidoptères," etc. (1827), which was published in the same year that Treitschke issued the sixth volume of his "Schmetterlinge von Europa," containing the description of his "*Apamea*" *conflua*, which he says occurred on the Riesengebirge (the locality referred to by Staudinger, "Stett. Entom. Zeit., 1857, p. 236). It was not until about 1857, when Dr. Staudinger returned from his collecting tour in North Europe, that Iceland examples of *conflua* found their way generally into collections. The Shetland form of *conflua* has been named var. *thulei.*

In conclusion, I may add that I regret that the action of the City of London Entomological and Natural History Society, in the matter of my communication with reference to the *Luperina testacea*, var. *nickerlii* question last January, obliges me to depart somewhat from the course usually taken in this kind of controversy.—RICHARD SOUTH, 12 Abbey Gardens, St. John's Wood, N.W., December 16th, 1891.

THE SHAPE OF THE WING IN NOCTUA FESTIVA.—The above note is conclusive enough as to the locality of the original *conflua*, but it does not deal with the shape of the wings which was the point relied on at the meeting of the City of London Entomological and Natural History Society. Whilst I consider it very unscientific to draw positive conclusions from partial data, the little knowledge I have respecting this insect leads me to a very different result to that at which my friend Mr. Tutt has arrived. I do not know what he means by "a good and distinct sub-species," but in my opinion the Shetland insect is so connected by intermediate forms with the ordinary *festiva* that no line can be drawn between them. Speaking from my own specimens only, and without any reference to what may have been written on the subject, I find that *festiva* in the South of England always has broad wings. As we get further North, or on to elevated land there is an increasing proportion of the species with narrow wings. I have two such from Wallasey, and I occasionally take it here with similarly narrow wings. One of my Hartlepool specimens with remarkably narrow wings, taken at sugar in July last, was, if I am not mistaken, exhibited at the same Society on November 5th, by Dr. Buckell. The moorland form bred by the late John Sang, and still more freely by my friend Mr. Gardner, is smaller and more richly coloured, and the tendency to narrow wings is more pronounced. Of five specimens given me by Mr. Gardner, three of them have the narrow form of wing. My only Shetland examples are eight from Unst and six of them have narrow wings. I possess but one Irish specimen and I do not know the exact locality, but it also has narrow wings. Curiously enough Mr. Reid sent me two specimens this year as *festiva*, both taken at Pitcaple, Aberdeenshire; one of them is reddish in hue, is of the larger size, but has narrow wings; the other is cold dark brown like the Unst insects, of the smaller size, and has broad wings. Reasoning from my own series then, I would expect to find the species in higher latitudes, with this peculiarity still more marked, and can readily believe that in Iceland or in Norway, only the narrow winged form may be found. Be this as it may, the breadth of the forewing cannot be relied upon by those who would make two species of it.—JOHN E. ROBSON, Hartlepool.

VARIETIES OF ABRAXAS GROSSULARIATA.— Mr. Gregson has occasionally exhibited one or two drawers full of extreme varieties of this species as the result of one year's breeding. No one else being able to show similar results, doubts have been expressed as to the genuine nature of the exhibits. Mr. Gregson claimed that his "strain" of this insect, being the result of thirty years careful breeding from selected forms, was absolutely certain to produce varieties. He generally reared from 4,000 to 6,000 larvæ, and paired the best forms for the next year's stock. To prove the correctness of his statement he, in the spring of last year (1891), sent me 50 young larvæ taken at random from the progeny of the previous year's pairings. These I kept by themselves, and they eventually produced 33 imagines; 2 failed to emerge from pupa, and 15 died without pupating. For purposes of comparison I obtained a similar number of wild larvæ from gooseberry growing in a lane here. These produced 44 perfect insects 1 cripple, 4 failing to pupate and 1 being accidentally killed. The imagines from these wild larvæ were all of the most ordinary typical form, Mr. Gregson's larvæ gave me one very fine dark variety, and several other good forms, whilst the palest of them were many degrees darker than any of those from wild larvæ. My experiment, therefore, is conclusive enough, and shows that Mr. Gregson has really succeeded in producing a race of this insect differing considerably from the type. Nor need it be wondered at that he is able to show a drawer-ful every year, when we consider how large a number he rears annually. There was also a marked difference in the number of imagines produced from the two sets of larvæ, the smaller number produced from Mr. Gregson's being probably the result of long inter-breeding.—JOHN. E. ROBSON, Hartlepool.

NATURALISTS OF THE DAY.

I.—THE RT. HON. LORD WALSINGHAM,

M.A., LL.D., F.R.S., F.L.S., F.Z.S., F.E.S., ETC.

With this number is commenced a series of Portraits of "Naturalists of the Day."

The desire to become acquainted with the form and features of those we know by name and reputation has been greatly stimulated during the last half-century, by the introduction of Photography and the many methods of engraving, colour printing, &c., that have been discovered during that time. With a view to make the readers of the "British Naturalist" familiar with the appearance of those whose names they constantly meet with in their studies, this series has been projected. It is intended to contain portraits of those working naturalists whose names so often appear in the Magazines of the day, as well as of those whose knowledge has been communicated to us by their writings. The notices accompanying the portraits will, of necessity, be very brief, and are not intended for Biographies, which would not be appropriate during the lifetime of the individuals. It is hoped, in a few cases, that similar portraits may be given of those who have recently left our ranks, and who would have been included in the series, had they lived.

Thomas de Grey, sixth Baron Walsingham, was born in the year 1843. He sat in Parliament, as Member for the Western division of the county of Norfolk, from 1865 to his admission to the Peerage, on the death of his father in 1870. He has been a keen naturalist and sportsman all his life, played in the Eton and Cambridge elevens at Lord's, has shot twice in the Lords v. Commons match at Wimbledon, and has been noted for the big grouse bags he has made. On one occasion in August, 1872, 842 birds fell to his gun in one day, and on another occasion in August, 1888, the enormous number of 1,070 birds were shot by him. He is also a keen fisherman. In 1871 he made a sporting and collecting expedition to California and Oregon, and during eighteen months he never slept in a bed. He became a member of the Entomological Society in 1866, and occupied the chair in 1889-90. His contributions to Entomological science have been numerous and valuable. He is one of the best preservers of Lepidopterous larvæ, and recently presented to the Natural History Museum at South Kensington, a very fine collection prepared and mounted by himself, in which he has succeeded in preserving the natural colours by some process of his own. Perhaps it is amongst Micro-Lepidoptera that Lord Walsingham is most at home; his collection of these minute gems is probably the largest in the world, and his writings on the subject are numerous and valuable. In the "Transactions of the Entomological Society" for 1891, upwards of 70 species of African Micro-Lepidoptera are figured and described, most of them being new to science.

A PRELIMINARY LIST OF THE HYMENOPTERA - ACULEATA OF LANCASHIRE AND CHESHIRE,

WITH NOTES ON THE HABITS OF THE GENERA,

BY WILLOUGHBY GARDNER, F.R.G.S.

Read before the Lancashire and Cheshire Entomological Society, December 14th, 1891.

Up to the present time, compared with the more generally favored *Lepidoptera* and *Coleoptera*, but little work has been done in the counties of Lancashire and Cheshire in the order *Hymenoptera*; we have, however, had several observers here and there, who, during a series of years, have paid some attention, at any rate, to the *Aculeata*.

It is of course premature at present to attempt to compile a complete Aculeate-Hymenopterous Fauna of the two counties; still, it would appear to be very desirable to bring together and collate the observations which have been made up to date by a few isolated workers in different directions. In this way much interesting information which has hitherto remained scattered, often liable to be eventually lost, may be permanently preserved.

To this end, therefore, the following preliminary list of the Hymenoptera-Aculeata of Lancashire and Cheshire has been put together. It is hoped that such a list as the present will moreover be of use to our local workers in the order, and form a rallying point, as it were, and a basis, upon which much valuable information will in future be built up.

The writer is greatly indebted to the following observers, whose notes, most kindly given, have made the compilation of this paper possible. The initials opposite to the names will be used in the list as a reference to the recorder of the particular observation noted, viz :

Miss E. C. Tomlin, Chester, E.C.T.
Mr. J. T. Green, Oxton, Birkenhead, J.T.G.
*Mr. J. Ray Hardy, Manchester, J.R.H.
Rev. H. H. Higgins. M.A., Liverpool, H.H.H.
Mr. R. Newstead, F.E.S., Chester, R.N.
and the writer, W.G.

The valuable published records of the late Mr. Benjamin Cooke, of Southport, (B.C.), have also been made use of.†

The difficulty of naming obscure species correctly is often great; the Cheshire collectors, however, have had the kind and generous assistance of Mr. Edward Saunders, F.L.S., F.E.S., in this matter, which is hereby gratefully acknowledged.

In order to make the present list of more interest to readers of the "British Naturalist" generally, and to afford some slight information on the subject to many, who, it is hoped, may henceforward intend to pay some attention to the Hymenoptera, a very brief resumé of the habits of each family is included in the following notes on the species hitherto observed in the above-mentioned district.

PRÆDONES.

Comprising the Ants, *both social and solitary, and the rapacious animal-feeding* Wasps.

HETEROGYNA.

The *Social* Ants, dwellers in large communities and constructing elaborate nests; sexes three—male, female, and neuter.

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*List of *Anthophilæ* of Manchester district, published in British Association Handbook for 1887.

† List of species published in "Naturalist," December, 1879 and January, 1880.

FORMICIDÆ.

Most of our English species come under the head of Mining Ants, forming extensive burrows and excavations for their nests in various situations; some in the earth, in banks (*F. sanguinca*, *F. fusca*, and *L. niger*), under stones (*L. flavus*), and some in decayed wood (*L. fuliginosus*). The three non-mining species (*F. rufa*, *F. congerens*, and *F. exsecta*) construct pyramidal nests of twigs, leaves, &c., above ground. The Formicidæ so far recorded in our district are

FORMICA, Linn.
rufa, Linn.—Observed in Delamere Forest; a nest under pine needles, E.C.T.
fusca, Linn.—Common in the district, B.C., E.C.T., W.G.
race 1, cunicularia, Latr.—Taken at Greenfield, B.C.

LASIUS, Fab.=FORMICA, *pars.*, Smith.
fuliginosus, Latr.—Bowden, near Manchester, Delamere, B.C.
niger, Linn.—Common everywhere, B.C., W.G.
umbratus, Nyl., *brunneus*, Sm.—Bowden; B.C.
flavus, De Geer.—Abundant everywhere, B.C., W.G.

PONERIDÆ.

PONERA, Latr.
contracta, Latr.—This rare ant was taken near Manchester, by Mr. B. Cooke.

MYRMICIDÆ.

Very similar in habits to the Formicidæ, generally excavating nests underground; *M. scabrinodis* often occupies part of same bank or hillock with *L. flavus*. One species, *Stennamma Westwoodii* lives in nests of *F. rufa*.

LEPTOTHORAX, Mayr.
acervorum, Fab.—Found in nest of *F. fusca* on Bidston Hill, Birkenhead, by Mr. Henry Burns: it usually lives in colonies under bark of trees.

MYRMICA, Latr.
rubra, Linn.
race 2. ruginodis, Nyl.—Abundant near Manchester, B.C.
,, 3. lævinodis, Nyl.—Bowden, in Cheshire, B.C.; Cheshire and Delamere, E.C.T.
,, 4. scabrinodis, Nyl.—Common, B.C., W.G.
,, 5. lobicornis, Nyl.—This rare species was taken at Bowden by Mr. B. Cooke.

(To be continued.)

THE HETEROCERA OF THE ISLE OF MAN.

BY HENRY SHORTRIDGE CLARKE, F.E.S., ADVOCATE.

(Continued from Vol. I, page 212.)

Scotosia dubitata.—Widely distributed.

Cidaria russata.—Widely distributed. Some lovely dark forms to be met with at the Nunnery, Pulrose, and near Ramsey.

Cidaria immatata.—Widely distributed.

Cidaria prunata.—Widely distributed. Very common near Douglas in 1890.

Cidaria testata.—Occurs at Pulrose, Lezayre, and elsewhere.

Cidaria populata —Mr. Gregson states it occurs on the mountains, and feeds on the whinberry and cloudberry.

Cidaria populata v. musauaria.—Mr. Gregson took it on the mountains. It is unicolorous, dark brown, often very dark.

Cidaria fulvata.—Widely distributed.

Eubolia cervinaria.—Local, occurs at Ramsey. Mr. Gregson states it occurs wherever mallows or holly-hock grows, in lanes or in gardens; larvæ feed in June.

Eubolia mensuraria.—Occurs at Kirk Bride, commonly.

Eubolia palumbaria.—Common on the mountains, swarms on the hills at Lezayre.

Anaitis plagiata.—Local, occurs at the Abbey lands, Onchan, took 7 there in one afternoon, in 1890.

Tanagra chærophyllata. — Mr. Gregson states the insect is common on road sides, on the various ways up to the mountains.

PSEUDO-BOMBYCES.

Dicranura vinula.—Larvæ very common some years ago on willows at Kentraugh; the larvæ were also taken at Dalby, Kirk Patrick, in 1889.

Pygæra bucephala.—Very common, occurs plentifully at Kirk Bride and also near Abbey lands, Onchan, also at Santon. Have taken the larvæ both from oak and sallow.

Notodonta ziezac.—Have bred but one, from larva found at Kirk Bride. Occurs also at Port Soderick.

NOCTUÆ.

Thyatira batis.—Took one at sugar, at Glenduff, Lezayre, in July, 1890. Took 3 specimens at same place, June 22nd, 1891, on the wing.

Bryophila perla.—Occurs at Ramsey. Comes to light.

EXCHANGE.

*Lepidoptera marked * are bred.*

Exchange, Duplicates.—Alexis Artaxerxes, Carpini,* Plantaginis,* Velleda, L. dispar,* Illustraria,* Suffumata, Ribesiaria, Conigera, Nictitans, Tenebrosa, Tritici, Valligera, Lucernea, Festiva vars., Neglecta, Suspecta, Rufina, Adusta, Dentina, Solidaginis.—William Cowie, 5, Canal Street, Aberdeen, N.B.

Exchange.—Wanted Tertiary fossils, named and located. Offered in return Mediterranean shells, lepidoptera, &c... state desiderata; offered also Foraminifera, mounted or unmounted.—J. H. Cooke, Highland House, St Julian's, Malta.

Desiderata, Formicæformis Culiciformis, Porcellus, Statices Rubricollis, Complana, Lurideola, Sericea, Caniola, Pygmæola, Deplana, Aureola, Griseola, Strainmeola, Muscerda, Mesomella, Miniata, Irorrella; I will endeavour to make a good return.—John E. Robson, Hartlepool.

Australian Bird's skins and eggs, and other natural history specimens offered in exchange for Cretaceous fossils or skins and eggs of British birds.—J. Hammerton, Junr., c/o Hammerton and Son, Geelong, Victoria.

Exchange.—Colquhounana,* Musciformis,* Carmelita, Trepidaria,* Desiderata.—Numerous.—H. Murray, Lowbank Villas, Carnforth.

Exchange—Wanted good Botanical Sections. Will give a packet, of which I have six different, of Micro-material from New Zealand for each slide.—W. A. Gain, Tuxford, Newark.

Exchange—Coleoptera—Having undertaken the formation of a type collection of British Coleoptera for the local museum here, I earnestly appeal to coleopterists for spare specimens of any common species. Parcels will be thankfully received and postage paid, to be addressed C. E. Stott, Hon. Curator Ento. Section, Manchester Road, Bolton-le-Moors.

Exchange—Duplicates—Artaxerxes, Velleda, Sylvinus, Mundana, Fulva, Conigera, Fasciuncula, Furuncula, Arcuosa, Macilenta, Protea, Chrysitis, Dilutata, Caesiata, Albulata, Ocellata, Fulvata, Mensuraria, Lutealis, and Rubiella.—R. Adie Dalglish, 21 Princes Street, Pollokshields, Glasgow.

Duplicates.—Salmacis, Artaxerxes, Alsns, Megæra, Mendica*, Villica*, Æsculi, Trepidaria, Pinetaria, Mundana, Cæsiata, also a fine pair of A. Sabellæ*.—T. Maddison, South Bailey, Durham.

Duplicates.—Many Continental Butterflies in fine condition.—T. Maddison, South Bailey, Durham.

MEETINGS OF SOCIETIES.

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY Albion Hall, London Wall Meetings.—*Thursdays*, Fixtures: January 7, The Pterophorina, Mr. J. W. Tutt. Jan. 21, Larva Preserving, Mr. A. Quail. February 4, The Lepidoptera of Epping Forest, Mr. A. F. Bayne. February 18, The Genus Hepialus, Mr. J. E. Robson. Mar. 3, The Coccinellidæ, Mr. G. A. Lewcock. Mar. 17, The Genus Hadena, Mr. J. W. Tutt. Apl. 7, The Life-history of L. Salicis, Mr. A. N. Battley.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge, S.E. *Thursdays, Jan. 14th. and 28th.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY, Free Library, William Brown St., Liverpool. Next Meeting Monday, January 11th.

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TO CORRESPONDENTS.

By reducing the leads between the lines, space equal to nearly three additional pages has been gained, without giving the Magazine the crowded appearance that is so painful to read.

A portrait of Lord Walsingham, is given with the present part, forming the first of a series of portraits of Naturalists of the Day.

The February part will contain a portrait of H. T. Stainton, Esq., F.R.S., F.L.S., F.G.S., F.E.S., &c., Author of "A Manual of Butterflies and Moth," &c., &c. Other portraits are in rapid preparation.

Arrangements are now completed for continuing the Molluscan Section. W. A. Gain, Esq., of Tuxford, Newark, has kindly undertaken the Land and Fresh Water Mollusca, and Brocton Tomlin, Esq., of The Green, Llandaff, will attend to the Marine Section. Communications may be made to either of these gentlemen. All letters requiring a reply by post should contain stamp. (Mr. Tomlin will be from home for a fortnight).

The Section for Coleoptera is conducted by G. A. Lewcock, Esq., 73, Oxford Road, Islington, to whom also direct communication may be made. His "Gossiping Notes on British Coleoptera" will be resumed in the February part.

Mr. Lewcock also represents the Magazine in London, and will receive subscriptions, papers, and notes for publication, &c., &c.

Subscriptions, exchanges, business correspondence, notes, papers for publication, and all other communications, to be addressed—JOHN E. ROBSON, HARTLEPOOL.

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SUBSCRIPTIONS FOR VOL. 2 ARE NOW DUE.

FEBRUARY, 1892. *Part XIV.*

THE BRITISH NATURALIST:
AN ILLUSTRATED MAGAZINE OF NATURAL HISTORY,

CONDUCTED BY

JOHN E. ROBSON, F.E.S., Hartlepool,

WITH THE ASSISTANCE IN VARIOUS DEPARTMENTS OF

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Acronycta psi.—Common and widely distributed.
Acronycta megacephala.—Have met with this insect only twice.
Acronycta rumicis.—Have bred one specimen from larva found near Onchan.
Leucania conigera.—Rare. Odd specimens to be met with occasionally.
Leucania lithargyria.—Widely distributed.
Leucania loreyi.—A larva found at Onchan by Mr. C. S. Gregson of Liverpool, and bred by him; it was taken in an old garden.
Leucania impura.—Widely distributed.
Leucania pallens.—Widely distributed.
Tapinostola fulva.—Local and rare. Mr. Gregson states it occurs in damp or swampy places.
Hydrœcia petasitis.—Only twice, at North of the Island. Mr. Gregson states it is plentiful on the river bank, near Castletown. Pupæ at roots of *Petasites vulgaris* in August.
Hydrœcia micacea.—Common on Ragwort flowers, near Ramsey. Pupæ common in the stems of Ragwort, near the root, in August.
Xylophasia rurea.—Occurs at Tromonde, Lezayre, and elsewhere.
Xylophasia alopecurus.—Mr. Gregson records the capture of this insect. It is a very dark variety of *Rurea.*
Xylophasia lithoxylea.—Not uncommon at Lezayre.
Xylophasia polyodon.—Extremely common and widely distributed. Very dark forms, known as var. *Infuscata*, are almost black, at Lezayre; and very light forms occur near the Nunnery.
Xylophasia hepatica.—Occurs at the Nunnery.
Laphygma exigua.—Mr. Gregson records the capture of this insect, he took it near Onchan.
Charæas graminis.—Widely distributed, especially on the mountains. Took several large specimens on Garaghan Mountain in September, 1890.
var. Hibernica.—Mr. Gregson records the capture of this variety which is very variable in colour and hardly two specimens alike.
Luperina luteago var. Barrettii.—Mr. Gregson took it at Port Jack and Onchan Bay, on the wing late at night.
Luperina testacea.—Occurs at Ramsey, Mr. Jäger took it at light there in 1890.
Luperina cespitis.—All along the coast, larvæ feeds on sheep's fescue grass, perfect insect at light in September.
Mamestra anceps.—"Entomologist," Vol. IV, p. 311. Mr. Gregson has taken it at sugar on the coast at the end of May.
Mamestra furva.—Local. Not unfrequently at Luchan.
Mamestra brassicæ.—Extremely common and widely distributed.

Mamestra persicariæ.—Occurs occasionally at north of Island. Larvæ seen in old weedy gardens in September.

Mamestra albicolon.—Mr. Gregson took it on the coast, north of Peel.

Apamea basilinea.—Widely distributed and common.

Apamea gemina.—Occurs at Lezayre.

Apamea unanimis.—"Entomologist," Vol. IV, p. 311.

Apamea fibrosa.—Local and rare. Mr. Gregson records its capture on the low lands near the Nunnery Grounds.

Apamea oculea.—Common and widely distributed. Comes freely to sugar at Lezayre.

Miana strigilis.—Occurs at Lezayre. Came freely to sugar in 1890.

Miana fasciuncula.—Occurs at Lezayre. Came freely to sugar in 1890.

Miana literosa.—Widely distributed.

Miana furuncula.—Appears at Lezayre, Onchan, and Pulrose.

Caradrina morpheus.—Has been taken at Onchan, and elsewhere on the coast.

Caradrina cubicularis.—Common and widely distributed, occurs everywhere.

Agrotis valligera.—Occurs along the Onchan coast. Common on Ragwort flowers in August at Ramsey.

Agrotis suffusa.—Widely distributed. Comes freely to sugar at Lezayre.

Agrotis saucia.—Uncertain in its appearance. Has been taken near Ramsey.

Agrotis segetum.—Common in Lezayre. Comes freely to sugar there.

Agrotis exclamationis.—Common and widely distributed. Some lovely forms and very variable in colour came to sugar in Lezayre in 1890.

Agrotis corticea.—Appears widely distributed but by no means common.

Agrotis ripæ.—Local. Mr. Jäger took about one dozen near Ramsey in August, 1890.

Agrotis cursoria.—Local and rare. Occurs occasionally on the coast at Onchan.

Agrotis nigricans.—Took two very light coloured specimens at Cottage Mona, Lezayre, at sugar in 1889.

Agrotis tritici.—Occurs all round the coast of the Island. Mr. Jäger took it near Ramsey in 1890.

Agrotis obelisca.—Local and rare, to be met with occasionally.

Agrotis præcox.—Mr. Jäger records its capture near Ramsey in 1890.

Agrotis pyrophila.—To be found on Ragwort flowers occasionally at Ramsey.

Agrotis porphyrea.—Plentiful on heaths.

Agrotis lucernea.—Occurs at Onchan and coast of the Island.

Agrotis spinifera.—Mr. Gregson has kindly given me the following Note concerning this insect: "Growdale" bog and "Bank's Howe" only two specimens have been known to occur, the first taken by C. S. Gregson is now in the great collection of British insects in the possession of Sydney Webb, Esq., at Dover; the second specimen was treated by its capturer as a poor variety of *Valligera*, from which, and from many of its allies, it may always be known by its pure white abdomen and by its extremely white underwings. It is one of the rarest European moths.

(To be continued).

Coleoptera.—Notes.

GOSSIPING NOTES ON BRITISH COLEOPTERA.

BY G. A. LEWCOCK.

(Continued from Vol. I, page 199.)

Coleopterous insects in 1891 were fairly numerous, and our correspondents are to be congratulated on the improvement which has taken place in recording their captures in this department of Entomology. The City of London and the Lancashire and Cheshire Societies, as usual, are well to the front, both societies fortunately possessing young and active students of this order. It is the latter class which the Editors of the "British Naturalist" especially desire to encourage; but, at the same time, the co-operation of advanced entomologists is quite indispensable, and their notes and observations, records of captures, &c., are of great value to their fellow-workers in the science.

On the commencement of a new season, the following questions have frequently presented themselves to me, viz.: "What species shall I add to my collection this year?" and "Can I search out the life-history of some species which has hitherto evaded my efforts?" Keeping these objects steadily in view and striving to attain their solution, the year rolls on. Spring comes, with its radiance of blossom;

and, as the blossom scatters, the pale green foliage is seen peeping from the stems and branches in all directions. Nature is rejoicing again in the glad sunshine, and the coleopterist goes forth seeking to unravel her secrets. Spring glides imperceptibly into Summer, and gay flowerets and brilliant foliage meet our gaze as we wander through the meadows and lanes, or by the streams, searching the different plants for the various insects found thereon. Summer deepens into Autumn; when red leaves quickly bestrew the ground, and we observe with regret how the evening twilight gathers in earlier and earlier from week to week; then Winter comes, with its rude gales and snow-storms, and we betake ourselves to the fireside and examine specimens put by for determination at the off-time of the year. It is then, perhaps, that we ask ourselves "What have I accomplished this season?" It is also at this period that the assistance of the experienced naturalist is most needed, as the task of differentiating species is often so difficult, that older opinions than our own are of great help in this matter. We trust that this assistance will always be readily granted to our young friends, who, by thus acquiring fresh knowledge, will also, in their turn, be able to assist other students. Wishing our readers every success in the coming year, I will now pass on to the subjects usually considered in these Notes.

The next genera, following the order of Sharp's catalogue, are *Lionychus* and *Lebia*. It may be as well here to refer to the classification in Canon Fowler's "Coleoptera of the British Islands." The genus *Lionychus* in the latter work is included in the group Lebiina (the genus *Lebia* being the first in order), as also are *Dromius*, *Aëtophorus*, *Demetrias*, *Metabletus*, and *Blechrus*. Dr. Sharp, however, gives *Lionychus* the preference to *Lebia*, following immediately with *Cymindis*, *Masoreus*, *Loricera*, &c. That the order laid down by Fowler is the more correct, will, I think, be generally admitted, but as these authorities differ in their methods of classification, it will hardly suit our purpose to discuss the merits of either.

LIONYCHUS, Wissman.—The name of this genus is derived from two Greek words, meaning "smooth claw," referring to the tarsal claws, which are smooth and simple. But one species, *quadrillum*, Duft., inhabits this country. It is found chiefly in marshy places on the coast, under stones, &c., and is not a common beetle. Taken by Mr. Champion at Whitstable (Kent), and by Mr. J. J. Walker at Sheerness. Fowler also gives Slapton Ley (Devon), Lymington, Raincliffe Wood (Scarborough), and Southend.

LEBIA, Latreille.—Probably from Greek word, meaning a cauldron or basin, and perhaps refers to the rounded shape of the elytra. Dr. Sharp enumerates four species, viz.: *crux-minor*, *hæmorrhoidalis*, *cyanocephala*, and *chlorocephala.* None of the beetles are common but *L. chlorocephala* is pretty sure to turn up occasionally in South of England. In habits the insects are carnivorous, and their presence on broom and other flowering shrub is probably to be accounted for by their prey frequenting these plants.

L. CRUX-MINOR, L.—This species has the palpi of black. Occurs in marshy places in woods, in moss, and at "sugar," &c. Very rare, Kent, Tunbridge Wells, Plumstead, Surrey, Coombe Wood, Headley Lane, Crohamhurst, Godalming (G. C. Champion, "Kent and Surrey Coleoptera"). Dr. Power also took a large number at Holm Bush, near Brighton, in 1857. Several localities, besides the foregoing, are given by Canon Fowler, and perhaps some of our correspondents may be fortunate in turning up specimens during their excursions.

IRISH COLEOPTERA IN 1891.—The greater part of the Summer season of 1891 was wet and I was not able to take such advantage as I would have wished of the opportunities that presented themselves. I took *Carabus catenulatus* plentifully on the Dublin mountains, in June and July, also *Nebria gyllenhali*, *Pterostiehus vitreus*, and *Patrobus excavatus*, the last being very abundant. *Carabus arvensis*, *Leistus rufescens*, *Stomis pumicatus*, and *Taphria nivalis* also occurred, but much less commonly. June 20th, on a trip into Co. Wicklow, I had an opportunity of exploring a bog near Newcastle, where I took *Elaphrus cupreus* plentifully, and a couple of *Dyschirius salinus.* July 11th, in the same County, at Lough Nahanoge, I took a fine male *Carabus glabratus*; and Sept. 19th, two female *C. clathratus* on the Great Sugar Loaf. Of the lowland species, *Bembidium rufescens* occurred under bark at Stillorgan, and *B. 5-striatum* in moss, also *Badister bipustulatus* (very abundantly), and *Pterostichus gracilis.* With the *Truncatipenne* group I was not very successful, only taking *Dromius 4-maculatus*, *agilis*, *nigriventris*, and *melanocephalus*, also *Demetrias atricapillus.* Early in August I went to stay in Co. Louth for some weeks, but the torrential rains, incessant during that month, made collecting very difficult. I took two *Cychrus rostratus*, male and female, at Castlecoo; and *Carabus nemoralis* in abundance in the corn fields. The specimens of the latter beetle seem to belong to a variety with very shallow punctures, and a triple row of slightly raised granulations on each wing-cover. *Pogonus chalceus* was abundant in the salt marshes at Clogherhead, together with *Dichirotrichus pubescens.* I took single specimens only of *Pogonus littoralis*, *Acupalpus luridus*, *Harpalus puncticollis*, and *Dyschirius politus.* *Calathus piceus* seems a very common species in Co. Louth on the sandbanks, but I have not found it elsewhere. *Sphrodrus** occurred twice, which is remarkable as the dwelling-houses in that district are few and widely scattered,—but I am disposed to think the species is much less rare on this side of the Irish sea than is commonly imagined.

As the net result of this season's work I have only added one new Carabid to the Irish list:—*Pogonus littoralis*, although I have satisfied myself that some beetles considered rare in Ireland are by no means really so.

H. G. Cuthbert.

A PRELIMINARY LIST OF

THE HYMENOPTERA-ACULEATA OF LANCASHIRE & CHESHIRE,

WITH NOTES ON THE HABITS OF THE GENERA,

BY WILLOUGHBY GARDNER, F.R.G.S.

Read before the Lancashire and Cheshire Entomological Society, December 14th, 1891.

(Continued from page 23.)

FOSSORES.

Solitary insects, of two sexes only, male and female, no neuter; comprising certain *Ants* and all the *Sand wasps* and *Wood wasps.* The females burrow little tunnels in sand, mud, dead wood, &c., where they deposit their eggs in a nidus, storing up as sustenance for the future grub such animal food as Lepidopterous larvæ, Diptera, Coleoptera, other Hymenoptera, Aphidæ or Arachnidæ, according to the species; these products of the chase are either stored up alive, or reduced to semi-torpidity by the poison of the insect's sting. Though "solitary" in habit (*i.e.*, the female constructs a single nidus for herself in contradistinction to the common nest among several hundred individuals of the "Social" species) the Fossores often form large colonies of many separate burrows in close proximity.

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* Since last publication of "Gossiping Notes," I have been informed by my friend Mr. T. H. Hall that two specimens of this insect were taken in a beetle-trap at a Watford Brewery. It would thus appear that Mr. Kendrick's hints on beetle-traps are worthy of a great deal more attention from persons who desire to obtain this species.—G.A.L.

MUTILLIDÆ.

Solitary Ants, whose habits are but little known; they are probably parasitic upon various insects, including bees of the genus Bombus, whose nests they have been observed to inhabit.

MYRMOSA, Latr.

melanocephala, Fab.—Recorded from Delamere, B.C.

SAPYGIDÆ.

The first family of the *Sand Wasps*. The female forms a nidus for its egg in a burrow previously excavated by some other insect (*e.g.* a Colletes, Chelostoma, or Osmia) in the ground or in wood; it sometimes makes use of a deserted snail shell. It stores up the larvæ of Lepidoptera as food for its offspring.

SAPYGA, Latr.

5-punctata, Fab.—Rainhill, near Liverpool, H.H.H.; Upton, near Chester, at burrows in old barn wall, E.C.T.

SCOLIIDÆ.

The life histories of our two British species do not appear to be fully worked out; the females of *Tiphia minuta* are found under cow dung and possibly prey upon *Aphodii;* the males frequent the flowers of the wild carrot. Neither of the species has yet been recorded in our district.

POMPILIDÆ.

The members of this large family often burrow in hard sand hills by the seaside *(P. rufipes, P. plumbeus)*, or in light loose sand *(A. variegata)*, or in wood. Nearly all the species prey upon spiders, except *P. niger*, which stores up the larvæ of Lepidoptera.

PRIOCNEMIS, Schiödte,

exaltatus, Fab.—Taken at Bowden and Delamere, B.C.

CEROPALES, Latr.

maculatus, Fab.—Southport, B.C.

POMPILUS, Fab.

rufipes, Linn.—Southport, B.C.

niger, Fab.—*approximatus*, Sm., *melanarius*, Bond.—Southport, Manchester, and Hazelgrove, near Manchester, B.C.

plumbeus, Fab.—*pulcher*, Shuck.—Southport and Cheshire coast sandhills, B.C.; Wallasey sandhills, W.G.

gibbus, Fab.—*trivialis*, Dhlb., Thoms., &c.—Wallasey sandhills, near Birkenhead, J.T.G.; common, B.C.

pectinipes, V. d. Lind.—*crassicornis*, Shuck, Sm., ♀—Southport, taken 1879, B.C.

ASTATIDÆ.

Females burrow in hard sand; they prey upon larvæ of Lepidoptera and sometimes upon other Hymenoptera.

ASTATA, Latr.

stigma, Panz.—*jaculator*, Sm. (Zool).- This rare species has been twice recorded from our district, one specimen having been taken at Southport by Mr. B. Cooke, on 25th June, 1879, and another on Wallasey sandhills by myself, on the 5th July, 1891, (*v*. E. M. Mag., Jan., 1892).

LARRIDÆ.

The various species of this family excavate their little tunnels in many different situations; *Trypoxylon figulus* in banks of light earth, often in colonies; *T. clavicerum* in old timber; and *T. attenatum* in briar sticks. The food stored up is also varied, *Trypoxelon* preferring spiders, and *Tachytes* larvæ and a small grasshopper.

TRYPOXYLON, Latr.

figulus, Linn.—Bowden occasionally, B.C.

TACHYTES, Panz.

pectinipes, Linn. - *pompiliformis*, Sm.—Wallasey sandhills, W.G.

SPHEGIDÆ.

The nidus is formed at the end of a burrow excavated in a bank of earth on sand; the prey of the various species generally consists of Lepidopterous larvæ, with the exception of *A. viatica*, which apparently confines its attention to spiders.

AMMOPHILA, Kirb.

sabulosa, Linn.—Generally distributed B.C.; Wallasey J.T.G., H.H.H., W.G.

hirsuta, Scop.—*viatica*, Sm.—Southport B.C.; Formby, H.H.H.

(To be continued.)

Reports of Societies.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

January 14*th*, 1892.—W. H. Tugwell, Esq., in the chair. W. A. Harrison, F.C.S., F.R.M.S., was elected a member. W. R. Adkin exhibited *Sesia ichneumoniformis*, Mr. Tugwell remarked that the larvæ were supposed to feed on *Lotus corniculatus*; Mr. Weir said it used to cccur at Charlton and he thought there was no *L. corniculatus* in that particular locality. Mr. Jager exhibited two examples of *Vanessa antiopa*, bred by Mr. Werner of Bredenkoff, Germany, in one the dark band and the blue spots on the primaries were obliterated, and in the other the yellow border was considerably widened, and entirely absorbed the dark band and blue spots, as well as the two costal spots, the border was also much diffused with black. Mr. Weir remarked on this species occuring so far north as Hudson's Bay. Mr. C. Fenn showed *Agrotis tritici*, grey and dark forms, from the north of Scotland and Sligo. Mr. Tugwell again exhibited the black specimens of the *Eupithecia* from Paisley, with typical examples of *E*, *virgaureata* and *E. castigata*, and remarked that he had been in communication with a correspondent at Paisley who informed him that *Virgaureata* did not occur in that district, and the food plant was exceedingly rare; he had had the pupa sent him and it did not accord with Harper Crewe's description of the pupa of *Virgaureata* and on carefully comparing the black specimens with the *Eupithecia* in his collection, Mr. Tugwell said he was quite sure that it was not as he first supposed, a black form of *E. satyrata*, nor as Mr. Tutt suggested of *E. virgaureata*, but was undoubtedly referable to *E. castigata*. Mr. Tutt said he was still of opinion that the species was *Virgaureata*, which he had on many occasions received from Paisley; he exhibited, typical, intermediate and black forms of *virgaureata* from Paisley, also *E. albipunctata*, and var *angelicata*. Mr. C. G. Barrett said that on first seeing these black specimens he thought they were *Trisignaria*, but he was inclined to think Mr. Tugwell was right in referring them to *Castigata*; Mr. Barrett added that at Cannock Chase he had taken specimens of *Castigata* quite as black as those under discussion. Mr. Tugwell said he thought Mr. Tutt's specimens were *Castigata* and not *Virgaureata*, but Mr. Barrett said four of them were certainly the latter species. On Thursday, February 11th, Mr. H. Wallis Kew will deliver a Lecture entitled "The Dawn of Memory in the Animal Kingdom."—H. W. BARKER, *Hon. Sec.*

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

Thursday, January 7th, 1892.—Exhibits.—Mr. Hill, *Amphidasys betularia* var. *doubledayaria*, and a specimen with the dark markings transformed into buff, slightly darker than ground colour. Mr. Jäger, *Vanessa antiopa* from Germany, including a specimen without blue spots, and another without the blue spots nearest tip of wing. Mr. Prout, a long series of *Cidaria russata*, autumn brood, taken at sugar in Isle of Wight, including most of the named varieties. Mr. Battley, life history of *Abraxas ulmata*. Messrs. Quail and Simes, a number of life histories, mounted on the natural food plants. Mr. Fox also exhibited preserved larvæ. Mr. Southey, a well-marked specimen of *Smerinthus populi*, bred from a dug pupa, having a dirty white right hand wing, similar to the xanthic varieties of *Epinephele janira*; also a number of well preserved larvæ. Mr. Goymour, *Polia flavicincta* from Enfield. Mr. Smith, *Xylina petrificata* from Blandford, Dorset, *Hybernia aurantiaria*, etc. Mr. Riches. a variable series of *Agrotis exclamationis* from Highgate Wood. Mr. Milton, *Aporia cratægi*, taken at Malvern in 1876; and *Plusia orichalcea* from Cambridge; also in Coleoptera, *Calathus micropterus*, *Leiodes glabra*, *L. castanea*, and *Colymbetus exoletus*: and in Diptera ,*Eristalis sepulchralis*, *Therioplectes micans*, and *Xylota syjvarum*. Mr. Newbery, specimens of *Ilybius fenestratus*. Mr. Heasler, *Choleva spadicea*, remarking he had found this rather a scarce species, very local in Highgate Woods. Mr. Quail read a paper on "Preserving larvæ," describing his method of killing and preserving Lepidopterous larvæ, and also detailing the difficulties peculiar to certain species; he likewise explained his system of preserving food plants with dry sand. Messrs. Battley, Simes, Southey, Milton and Dr. Buckell took part in the discussion which followed. A discussion also took place respecting the depositing of eggs by moths; the first portion being generally fertile, while the later ones often proved infertile. It was suggested that in the latter case the fertilizing fluid had become exhausted.

Thursday, January 21st, 1892.—Exhibits.—Lepidoptera, Mr. Southey, a variable series of *Apamea gemina* from Hampstead; Mr. C. B. Smith, female *Lycaena corydon* shewing variation in the amount of blue coloration, also *Melanippe fluctuata* from the Lake District: Mr. Quail, variable forms of *Miana strigilis*, from the London district, Wicken, Margate, &c.; Mr. Battley, various Pterophori and a series of *Diurnea fagella* from various localities, those from districts near the metropolis exhibiting the darkest ground colour; Mr. Simes, a *Bombyx neustria* with bars confluent, he called attention to a similar variety of *Bombyx rubi* exhibited at a meeting of the Society on 18th September, 1890; also two cocoons of this species containing all the British species of *Pterophorina* except *C. rhododactyla*; Mr. Fox, three larvæ feeding on tomato which had been imported from Teneriffe, where this fruit is extensively cultivated. The larvæ seemed to possess affinities with *Dianthœcia*, aud Mr. Tutt thought it probable that they might prove to be *Prodrenia littoralis*, a specimen of which was exhibited by Mr. Boden at the Society's meeting on October 15th, 1891, ("British Naturalist," Vol. I, p. 326). This insect abounds in the Canary Isles and on the north-west coast of Africa. Two of these larvæ were pea green, with three darker green longitudinal lines, those on the side being suffused with rusty red. The surface of the body was covered with whitish tubercles, studded with short hairs. Head, pea green. The third specimen was similar in markings, but had the ground colour whitish green, and the tubercles black. Coleoptera.—Mr. Heasler, a series of *Rhizophagus perforatus*; Mr. Milton, dark form of *Strangalia armata*, *Helops ceruleus*, *Phalera cadavorina*, and in Hemiptera: *Calocoris sexguttatus*. Mr. Tutt then read his paper on the "Pterophorina," giving an account of the various species inhabiting Britain, with the methods of obtaining them. He also mentioned his monograph of the group, which was now publishing in the "British Naturalist," and would be issued in a separate form. A vote of thanks to Mr. Tutt concluded the proceedings —A. U. BATTLEY and J. A. SIMES, *Hon. Secs.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.

Monday, January 11th, 1892.—The annual meeting of this society was held in the classroom of the Free Public Library, William Brown Street, where, although the weather militated against a large attendance, a most enjoyable evening was spent. The president, Mr. S. J. Capper, occupied the chair, and in the course of his annual address referred to the entomological records of the past year, and also gave a most interesting personal reminiscence of his experience as an entomologist for over fifty years. This began at an Epping school. where Henry Doubleday did so much work, and helped the schoolboys by naming and describing their captures. The president spoke of the progress of the science since his first aquaintance with it, and the improvements in the mode of capturing and preserving specimens. He referred also to the inauguration of the Lancashire and Cheshire Society, the first meeting of which was held at his house at Huyton, in March, 1877. The president further enumerated the principal achievements of the past session, which, he said, had been at least equal in good work to any previous session. In conclusion, he remarked that it was to the younger members that they now looked for the further progress of the society (applause). Mr. Capper was re-elected president; and the Rev. H. H. Higgins vice-president; Mr. F. N. Pierce (hon. secretary) and Mr. C. H. Walker (hon. librarian) were re-elected; the new members of the committee being Mr. George Harker and Mr. C. E. Stott.—During the evening the following specimens were exhibited by the members named :—Varieties of British Lepidoptera, the president; varieties of *Eupithecia venosata*, Mr. C. S. Gregson ; life history of the bot fly *(Gastrophilus equi)*, Mr. R. Newstead ; *Phycis splendidella*, captured at Wallasey, July, 1891, Mr. H. B. Jones ; a fine web formed by the larvæ of *Ephistia elutella*, Dr. J. W. Ellis ; and Scotch *Dasydia obfuscaria*, *Noctua sobrina*, *&c.*, Mr. C. E. Stott. —F. N. PIERCE *Hon. Sec.*, 143, Smithdown Lane, Liverpool.

Mollusca.—Notes.

NOTES ON VARIETIES.—A number of causes may be recognised as constantly at work producing variation among the Mollusca. Some varieties have established themselves as more or less permanent races. According to my own observations banding and colour among the *Helices* are the most permanent varietal characteristics, especially the former; of course crossing may, and no doubt does cause endless variation in these respects, but in breeding *H. nemoralis* and *H. hortensis* from like parents I have found them invariably produce young of the same colour (varying only slightly in shade) and banding as themselves. In this respect they appear to come as true as the different breeds of domestic poultry. The difficulties of getting *Helices* to breed in confinement and still more of rearing them from the egg are great, and my successes in this way have not been so numerous as I could have wished, but in every case in which I have succeeded in rearing the progeny of like parents, to such a stage that the colour and banding could be determined, I have found these like those of the parents, I expect to find during my experiments, which I am still continuing, exceptions to this rule, if only as reversions to some ancestral form, still, so far, the results have been in favour of true breeding in these respects, and what is more singular, I have not succeeded in breeding, unless each snail has belonged to the same variety. This seems to indicate a preference among these animals for mating with those of like colour and banding to themselves. As bearing on this subject, no doubt every collector has noticed the general similarity among snails of these species taken in any given locality. With one of the slugs, *A. ater*, I had a different experience as related in a former article.

Some variations appear to be the result of congenital defect, as the albino varieties and those with translucent bands. The only example of any *Helix* of the latter kind which I have ever taken occurred in a ditch about three miles from this place, this was var. *hyalozonata* of *H. nemoralis*, and although I have searched the same and adjacent localities several times every year since I have never found another.

That when once produced, this banding, like other pecularities, tends to become hereditary, is abundantly proved by the numerous examples of this form found in many districts. Had another individual with the same peculiarity been produced in the same neighbourhood and these paired we might have had the var. established in this place.

Dr. Hauesler has bred the beautiful white variety of *Pupa dolium* for several years, removing all those which were coloured, so as to breed from white individuals only. A short distance from Tuxford there is a field in which the white var, of *H. hispida* is abundant, and at one spot the prevailing variety. For several years I have, from time to time, visited this field, and I believe the whites are becoming more common than formerly, their breeding with the common forms has resulted in shells of all shades. I have recently arranged a series from pure white gradually darkening till almost the darkest hues of this species are reached.

Many varieties are determined during the life of the individual by environment, temperature, the nature and quantity of the food supply, &c. I may mention the forms with reflected lips as well as those decollated forms mentioned last month, the eroded shells frequently found among fresh-water species, thick and thin shelled vars., and the large and minute forms, the latter probably dependent on the abundance or scarcity of food, and also on climatic influences, the latter cause appears to affect individuals in various degrees, just as among ourselves some stand hot summers or severe winters better than others, they are also, when the conditions producing them are permanent, transmitted to the offspring producing apparently permanent races. As an example I will mention the monster *B. decollatus* var. *maxima* of Algeria, these measure 50 by 20 mm., while the ordinary form in Europe measures only 25 mm., the var. *major* from the same country measures about 35 mm. M. Ancey informs me that a form somewhat resembling that of Europe occurs sparingly in some districts, and that in the Sahara a small thick shelled form is found, not much decollated, these varieties are never found together.

As an example of diminution of size I may mention the var. *serratina* of *Pupa secale* from the Pyranees, measuring only 7 mm., the ordinary British examples being 8 to 8.5 mm. in length. Although mountainous districts seem the proper homes for the pigmy vars., a curious instance of the contrary is seen in a list of shells from Formosa published by Mr. Damon, in which he mentions a large form of *Helix formosensis* from the mountains, and a small var. from the valleys of that country.

As an example of a change of size produced under altered circumstances I relate the following:—In September, 1884, I received some very large examples of *Paludina listera* from Mr. Milne, of Bowden, Cheshire, the largest measuring 43 mm. by 36 mm., these I placed in the aquarium, and they all favoured me with a brood of young in the course of a very few days, but the progeny never reached a large size, though they flourished fairly well, and their decendants are still living in the trough, though greatly diminished in number by the severe winter of 1890-1, which had but little effect on the *Limnœa*. Their average size is about 30 mm. by 25mm.—W. A. Gain, Tuxford.

Errata in January Number.

Page 15, line 16.—For "refracted" read "reflected."
Page 16, line 5.—For "the most" read "this most."
Page 16, line 8.—Read "so that a considerable number."

DRAGON FLIES.*

BY F. MILTON.

Dragon flies were formerly included in the order Neuroptera, but they are formed into an order by themselves called Odonata, but what that term means no one seems to know. Dr. Hagen, in the Entomologist's Annnal for 1857, divides them into two Tribes, and these again into six Sub-families, the chief distinguishing features being their eyes and wings. The thorax is large and round, and differs from that of other insects in the great development of the side pieces, especially the episterna, and also in the very small prothorax.

In the first sub-family, Libellulidæ, the hind wings are larger than the fore wings, and also dilated at the base; upper part of clypeus, or face, grooved; eyes not prolonged backwards; abdomen rather short. In the second sub-family, Cordaliidæ, the eyes are not contiguous, the upper part of clypeus rather round, abdomen club-shaped in the male, wings unequal. In the fourth family, Æschinidæ, the eyes are completely contiguous, and the wings unequal; they have also an opaque triangular spot at the base of the hind wings.

Now we come to the second tribe and fifth family, Calopterygidæ. Here we have the wings equal, and eyes not contiguous, head not round like the preceeding, but barrel-shaped and horizontal. The sixth family, Agrionidæ, all very similar to the Calopterygidæ but much smaller. These brief descriptions will enable anyone to distinguish the families.

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* Read at a meeting of the City of London Entomological and Natural History Society.

Dragon flies are all aquatic in the larval and pupal states. The eggs are deposited in various ways by different species. Darwin says the Libellula lay their eggs in jelly-like masses on the surface of ponds, and that the Agrions crawl deep in the water along the stems of submerged plants, and with their sword-like ovipositor, cut gashes into the stalk and insert their eggs therein. I saw *Catopteryx splendens* at Esher, settle on a water plant, and deposit its eggs on part of the part of the plant that was under water, the abdomen being plunged under the surface, whilst the remainder of the insect was on the plant above. I saw *Eschna cyanea* settle on a mossy bank overhanging a pond, and begin to apply the end of the abdomen to the bank as though ovipositing; it would then fly off to another part of the bank and do the same again. It was so intent upon what it was doing that I was enabled to take it with my hand. I scraped off some of the moss, but I could not detect any ova. I asked, through the "British Naturalist," what it was likely to be doing, but no one was able to reply. When the eggs hatch, which is in about a week, the larva is like the pupa except there being no sign of wings, and as their metamorphosis is incomplete they become more like the imago each time they shed their skin. The larvæ are very voracious and nothing comes amiss to them, water insects, tadpoles, small fish, and even worms and snails; and they in turn sometimes fall a prey to the Water Tiger (*Dytiscus marginalis*) and others of the genus. The larvæ are rather heavy and slow in their movements so they cannot often capture their prey by the chase, but to compensate for that their lower lip is considerably prolonged, and ends in a claw. This instrument is jointed, so that it folds up under the thorax when not in use, and is then invisible; the claw covers the face or lower part of the head. It is in consequence called a mask. When any small animal, unsuspecting danger, ventures near enough, out flies the claw and the creature is seized and brought to the mouth. They prefer to get under their prey, and seize them, like the shark, with an upward stroke.

Strange to say they breathe by means of their intestines, which are covered with numerous trachea. When it wishes to breathe, it opens the orifice to the intestines and admits a quantity of water, containing air in suspension, which is taken up by the trachea. The water thus introduced, can, at the will of the larva, be expelled with considerable violence, which projects them to some distance. Before emerging from their pupa skin, they crawl up some water plant and fasten themselves to it, then they burst the pupa-case down the back like other insects. In a pond near Clapton I have seen great numbers of the empty cases on the water plants. Their wings are very glossy at first, and their bodies brownish, their colour not being developed until they have been some time on the wing. One day I netted one of Agrions and as it had no bright colours like the others, and the wings were much more glossy, I thought it was a different species, but not having killed it, I found to my astonishment next morning that it had donned the blue markings of *Agrion pulchella*, and the wings were like those of this species also. Darwin says they do not pair until a week or a fortnight after emerging, and never before the males have assumed their proper masculine colours. In the matter of colour, perhaps, dragon flies can hold their own against all comers. Systematic writers appear to have been struck with their beauty, when they used such terms as *Catopterix*, pretty wing; *Puella*, girl; *Sponsa*, bride; *Virgo*, virgin. The voracity of the imago is, of course, too well known to need much comment. Dr. Duncan, in his "Transformations of Insects," says that, perhaps, they are the most bloodthirsty things in creation, they select a certain spot over some brook or pond, or by some hedge for their hunting ground; over this not very extensive range they keep flying backwards and forwards, snapping up flies, caddisflies, butterflies, bees, wasps, and even hornets are mentioned. I do not think, however, they have been known to attack other dragon flies, except to drive them away when foraging in their district. They are particularly careful to clean their faces after each meal, removing any particle of skin, &c., from their lips with their forceps, which they clean with their front legs like the fly. They have an advantage over all other insects in being able to fly backwards, forwards, upwards, or downwards without turning. When once they get hold of anything with their powerful jaws, they will not readily let go again. One day while I was getting a few *annulatus*, with a nephew of mine, I gave him one to hold whilst I went after another, assuring him that it would not sting him; presently he cried out "Oh! uncle, it is biting my hand." When I reached him, I found it had bit him, and in trying to pull it off, he had torn off the body, which he held in one hand, whilst the head still held fast to a finger of the other. There are two instances recorded of a battle being fought between a dragon fly (*Eschna grandis*) and a sparrow, and in both instances the insect was the victor.

In conclusion, I would like to call attention to a few peculiarities of these insects. They use their intestines in breathing; they capture their prey in the larval state with a folding claw on their lip; they develop their colours after being on the wing some time; there are also marked peculiarities in their mode of pairing. Unfortunately most dragon flies lose their beautiful colour soon after death. In some cases the colours may be preserved by cutting open the underside of the abdomen and carefully removing the contents. In the case of *C. annulatus* it will be well to drop in a little benzole, and then absorb it with carbonate of magnesia, as with greasy moths. After cleaning out, they should be stuffed with a little cotton wool to preserve the shape. It is always an advantage to keep them alive for a few days before killing them, that the abdomen may become emptied of its contents. *L. depressus*, *C. virgo* and *splendens*, *L. sponsa*, *P. pennipes*, and *A. minimum* do not fade much. I always kill them by dropping a little chloroform on the underside of the thorax.

164 Stamford Hill, N.

NOTES FOR BEGINNERS.—MICRO LARVÆ FOR THE MONTH.

GEO. ELISHA, F.E.S.

We can still find plenty to do during February, in getting completed all those numberless little matters that were put aside when time was far too valuable to give them other than a passing thought, and what a boon it seems, after a very busy season, when this period of well earned leisure arrives, when we can take it easy, with plenty of time to get through all we have to do in preparing for another campaign.

It often occurs to me, especially during the height of the season, how hard we work at our pleasures, and what a lot of trouble we take, and how many miles we travel to attain our object, the very little leisure (if any) we get during some few months, when species are emerging all around us, and when returning home after an outing with all our boxes filled, we find lots of good things out in our cages, we have to settle down to the uncongenial work of setting, it is at such times we are very apt to think that our study is not altogether an unalloyed pleasure, and we occasionally find ourselves wondering how it is we work thus hard, when we might do otherwise. This is a question very difficult to answer, for no matter what we resolve at such times, we find ourselves doing the same thing the following season; but it is just the chance of finding and occasionally breeding a rare or new species, that makes us forget the inevitable drudgery of setting, which so surely follows a successful season of larvæ collecting, there is also another powerful factor to reckon with, and that is an indescribable feeling of inward pleasure that only those who are earnest, studious workers, so constantly experienced when observing the many interesting and ever varying phases in the life history of these numerous living gems; this it is that impels us forward utterly forgetful of all our past trouble and helping us forward to fresh discoveries in the science, the study of which is such a never-ending pleasure.

It was this constantly recurring trouble of setting that is such a task at certain seasons, that set me thinking some years ago how to devise some scheme by which much of this work might be got over earlier in the year, when time was not so valuable, for it is impossible to give that calm attention, in the height of the season, to the setting these very small insects require. After a time I managed to get a forcing apparatus made which answered in every way satisfactorily. The description of this apparatus was published in the "Entomologist" Vol. XII, p. 238, but for the benefit of those who have not this particular vol. by them I again give the description in full.

The apparatus consists simply of a box, ten inches square and six inches deep, open at the top and lined with thin zinc; a zinc tray is made to fit the top, one inch and a half deep, to contain damp sand underneath on the tray is soldered a much smaller tray, an inch deep, which forms the boiler; a short piece of pipe is soldered in the upper tray through which to fill the boiler; the tray is then put on the box, the edges being made larger prevents it falling through, and underneath is placed a spirit lamp or jet of gas, the flame being barely a quarter of an inch long, which is quite sufficient to give a great and regular heat; a square hole is cut in the side of the box in front to put the hand through to regulate the light, and in the opposite side, just underneath the tray, a few holes are drilled in the box for ventilation, or the light will go out. Above the tray and resting on the damp sand, is a square zinc glazed case, eight inches high; the top square of glass is loose to lift out, for placing the bottles or glass jars in containing the pupæ, and also to regulate the heat. When all is ready, fill the boiler nearly to the top with water, then fill the tray with damp sand to give a moist atmosphere, and put on the glazed case, after which put in the glass jars containing the pupæ and in the centre suspend a small thermometer, and light the gas or lamp, which can be regulated with ease to keep the heat up to between 60 and 70 degrees, Fahr., it is then no further trouble, and will well repay anyone in getting it in order, for all the *Lithocollitidæ* are easily bred during February and March, and most of the *Nepticulæ* and *Cosmopteryx*, and many other species of *Tineina*; *Tortrices* also are easily bred, indeed, I may say, I have bred without any trouble all the species I have tried, that appear in May or June, thus easing the work at that time very materially, and leaving me quite at liberty to look after other species at that busy time.

There is no doubt, towards the end of the month, the old restless feeling will again begin to assert itself, and on some fine morning we shall probably be off to some favourite locality on one of our pleasant rambles, for the weather is at times very tempting, although so early in the year, and when fairly on our journey on these bright mornings the clear and pure atmosphere seems most exhilarating after our winter's occupation, and makes us search the hedgerows with keenness, and a reawakened interest. On these occasions if we should notice the common hart's tongue fern growing in the hedges, we must look over some of the dead fronds, when no doubt we shall soon observe the larva of *P. verhuelella* burrowing among the indusia, we need only take a small bundle of these fronds, keep them in a cool place, when in due time a nice series will emerge. Continuing our journey, we come to a wide marshy piece of ground covered with sedges, on the edges of which we see some dead stems of *Eupatoria cannabinum.* We must cut some of these stems, on examining which we shall probably see some small round holes in the sides, which are caused by the larvæ of *P. microdactylus.* By cutting a small bundle of these stems and keeping them out in all weathers to near the time of emergence, a fine series may be had.

A little further on we notice the larva of *Col. lineolea* is already beginning to blotch the leaves of the black horehound *(Ballota nigra)*, although even on this sheltered hedge bank it is scarcely out of the ground, and in the little patches of ground ivy *(Glechoma hederacea)* we now and then observe a few leaves that have whitish blotches on them, and know that the larva of *Col. albitarsella* is already beginning to feel the influence of the sunshine we occasionally get towards the end of this month. Continuing our journey we are, after a short time tempted to turn aside to examine some posts and rails on the edge of a field, formed of thick branches of elm trees, for we observe the bark falling off in places; on stripping off some of this loose bark, we find sure enough the dirty blackish larva of *Œ. fusca-aurella* under a slight web, mixed with frass and gnawed wood, these larvæ we may continue to find for the next two months, and others also in similar situations, we can also, during our stroll, still take the larvæ of *P. carlinella* in the seed heads of the Carline thistle, and *P. lapella* in the seed heads of Burdock, and the pupæ of *francillana* in the stems of wild carrot, and in those of wild parsnip the pupæ of *C. dilucidana*, the above and most of the species mentioned for last month, may still make our outings both interesting and profitable although the country has still a wintery aspect.

Shepherdess Walk, City Road, London, N.

General Notes.

Noctua conflua, Tr.—However excellently a summarised report* of a comprehensive scientific paper be drawn up, it is impossible to get an exact statement of facts in a few words. The paper "On *Noctua festiva* and *N. conflua*" (which was already in print as a part of "British Noctuæ and their Vars.," Vol. II, when I read it at the City of London Society's Meeting), is published verbatim in the December No. of the "Entomologist's Record," &c. It will there be seen, (p. 267), that the statement to which Mr. South takes objection, was simply used by me in a quotation made from Dr. Mason's writing, "Entomologist's Monthly Magazine," XXVI., p. 198, where he states of *conflua*: "Very abundant and variable; *this was first described as a species from Icelandic specimens*, and differs from the form usually called *N. festiva* var. *conflua* in British collections, in its *smaller* size." Of Dr. Mason's authority for this statement I know nothing, (although I daresay it is right, as Guenée gives Iceland as one of the two known localities in 1852), but Mr. South says "The words would never have been uttered by anyone who was acquainted with the facts of the case." It is interesting to think that this statement was put as my own in the report, since it has drawn such a strong expression of opinion from Mr. South, although the original statement was passed unheeded. When Mr. South has time to read my paper carefully, he will see that I, personally, make no such statement.

I am interested that Mr. South has unearthed the fact that Duponchel states that Treitschke sent a Noctua under the name of *conflua* to Boisduval; but, conversant as Mr. South ought to be with Staudinger and Wocke's "Catalog," he must know that his suggestion of *conflua* being a MS. name is idle, and that all synonymists are agreed that the description from Treitschke's "Schmet. von Europa," Vol. V., p. 405, is the type description, and that neither Duponchel nor Boisduval had anything to do with naming the species. Boisduval (who received a specimen from Treitschke according to Mr. South) figures in his "Icones," plate 83, a real Icelandic looking *conflua*. Now Boisduval and Guenée wrote the "Species général des Lép." ("Noctuelles") between them, and since Guenée gives as localities for *conflua* "Iceland and Prussia" ("Noctuelles," v., p. 332), it is more than probable that Boisduval's specimen was an Icelandic one; and since this Icelandic locality was published by Guenée in 1852

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*I must state in fairness to the Secretaries that this Report in question was sent for my correction before being sent to the various Magazines: and that I passed the statement in question without noticing at the time that Dr. Mason's quotation was put as if it were mine.—J.W.T.

("Noctuelles, vol. V.); the Icelandic invasion by Dr. Staudinger in 1857 turns out to be as futile to prove Mr. South's case as the rest of his note.—J. W. TUTT, Jan., 1892.

NATURALISTS OF THE DAY.

II.—HENRY TIBBETS STAINTON.

Perhaps no living Entomologist is better known by name than the gentleman whose portrait is given with this number. To say that he has done more to popularise Entomology than any other man, would be to say very little, for he has probably done more than any dozen men. Born on the 13th of August, 1822, he commenced to collect insects when he was only twelve years of age, and has therefore been a collector for nearly 60 years. His first important work in his great scheme of popularising entomology was "*The Entomologist's Annual*" for 1855, which contained a number of papers suitable for beginners, a list of new species of Lepidoptera taken in Britain subsequent to the publication of Stephen's Illustrations in 1835, and various other important papers. This publication was continued annually for 20 years. In 1856 he commenced the publication in monthly parts of "*A Manual of British Butterflies and Moths*," which is still the best and only complete work on the subject. In the same year was issued "*The Entomologist's Weekly Intelligencer*," "The dear old Intelligencer!" which did much to bring collectors into closer communication, which helped, if indeed it did not make, the system of exchange, and gave a wonderful impetus to the study. This was continued for 10 years and was then discontinued, amid general regrets. Subsequent attempts to establish a weekly Entomological paper have not proved successful. His next important work was "*The Natural History of the Tineina*," the publication of which has long been suspended. He has been an editor of "*The Entomologist's Monthly Magazine*" since the commencement, now nearly 28 years ago. He has been ready at all times to attend to any correspondent, or to receive visitors at stated days, to whom the treasures of his large collection and library were opened. Now, at 70 years of age, his interest in the science appears as keen as ever, and he is one of the most regular attenders at the meetings of the Entomological Society, and we know from our personal experience he is as ready to assist his correspondents as he was thirty or forty years ago; long may he live to do so.

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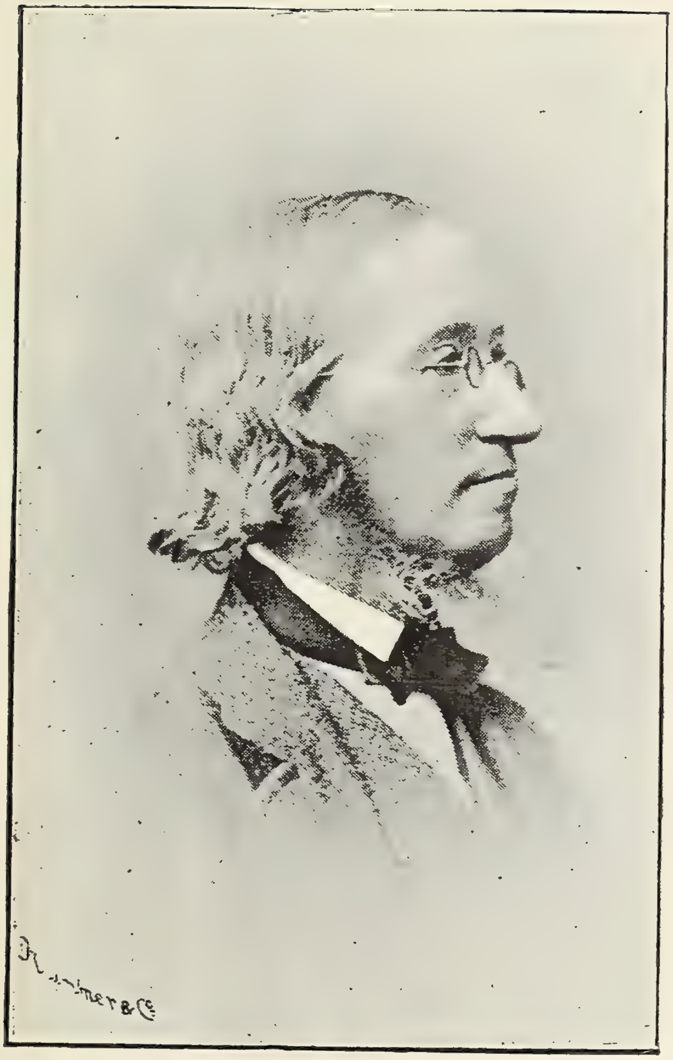

H. T. STAINTON,

F.R.S., F.L.S., F.G.S., F.E.S., ETC., ETC.

BRITISH MUSEUM

EXCHANGE.

*Lepidoptera marked * are bred.*

Duplicates.—British Coleoptera, a few Hemiptera and a few land and marine shells—Desiderata, Coleoptera, Lepidoptera, and other orders and named types of British and foreign shells.—A. **Ford**, Claremont House, Upper Tower Road, St. Leonards-on-Sea, Sussex.

Exchange—Duplicates—Aglaia, Cardamines, Sylvanus, Alexis, Ulmata, Jacobæa, Auriflua, Rubiginata, and Chi, Desid. Numerous.—F. **Emsley**, 98, West Street, Leeds.

Exchange, Duplicates.—Alexis, Artaxerxes, Carpini,* Plantaginis,* Velleda, L. dispar,* Illustraria,* Suffumata, Ribesiaria, Conigera, Nictitans, Tenebrosa, Tritici, Valligera, Lucernea, Festiva vars., Neglecta, Suspecta, Rufina, Adusta, Dentina, Solidaginis.—**William Cowie**, 5, Canal Street, Aberdeen, N.B.

Exchange.—Wanted Tertiary fossils, named and located. Offered in return Mediterranean shells, lepidoptera, &c.. state desiderata; offered also Foraminifera, mounted or unmounted.—J. H. **Cooke**, Highland House, St. Julian's, Malta.

Desiderata, Formicæformis, Culiciformis, Porcellus, Statices, Rubricollis, Complana, Lurideola, Sericea, Caniola, Pygmæola, Deplana, Aureola, Griseola, Stramineola, Muscerda, Mesomella, Miniata, I will endeavour to make a good return.—**John** E. **Robson**, Hartlepool.

Australian Bird's skins and eggs, and other natural history specimens offered in exchange for Cretaceous fossils or skins and eggs of British birds.—J. **Hammerton, Junr.**, c/o Hammerton and Son, Geelong, Victoria.

Exchange.—Colquhounana,* Musciformis,* Carmelita, Trepidaria,* Desiderata.—Numerous.—H. **Murray**, Lowbank Villas, Carnforth.

Exchange—Wanted good Botanical Sections. Will give a packet, of which I have six different, of Micro-material from New Zealand for each slide.—W. A. **Gain**, Tuxford, Newark.

British Orethoptera.—As I contemplate writing a popular handbook on the above as a companion volume to my "Illustrated Handbook of British Dragon Flies," I shall be very pleased to receive any information from those who are interested in them. Local lists and rare specimens for figuring, &c., would be very acceptable.—A. **Harcourt Bath**, Ladywood, Birmingham.

Exchange.—Wanted European Odonata, and British Orthoptera—Duplicates British Rhopalocera and Odonata.—A. **Harcourt Bath**, Ladywood, Birmingham.

Exchange—Duplicates—Artaxerxes, Velleda, Sylvinus, Mundana, Fulva, Conigera, Fasciuncula, Furuncula, Arcuosa, Macilenta, Protea, Chrysitis, Dilutata, Caesiata, Albulata, Ocellata, Fulvata, Mensuraria, Lutealis, and Rubiella.—R. **Adie Dalglish**, 21 Princes Street, Pollokshields, Glasgow.

Duplicates.—Salmacis, Artaxerxes, Alsus, Megæra, Mendica*, Villica*, Æsculi, Trepidaria, Pinetaria, Mundana, Cæsiata, also a fine pair of A. Sabellæ*.—T. **Maddison**, South Bailey, Durham.

Duplicates.—Many Continental Butterflies in fine condition.—T. **Maddison**, South Bailey, Durham.

CHANGE OF ADDRESS.

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY from ALBION HALL, LONDON WALL to 33, FINSBURY SQUARE, E.C.

MEETINGS OF SOCIETIES.

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY 33 Finsbury Square, E.C. Meetings.—*Thursdays*, Fixtures: February 4, The Lepidoptera of Epping Forest, Mr. A. F. Bayne. February 8, The Genus Hepialus, Mr. J. E. Robson. Mar. 3, The Coccinellidæ, Mr. G. A. Lewcock. Mar. 7, The Genus Hadena, Mr. J. W. Tutt. Apl. 7, The Life-history of L. Salicis, Mr. A. N. Battley.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge, S. E. *Thursdays, Feb. 11th.* and 25*th*.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY, Free Library, William Brown St., Liverpool. Next Meeting Monday, February 8th

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TO CORRESPONDENTS.

By reducing the leads between the lines, space equal to nearly three additional pages has been gained, without giving the Magazine the crowded appearance that is so painful to read.

A portrait of H. T. Stainton, F.E.S., &c., is given with the present part, forming the second of a series of portraits of Naturalists of the Day.

The March part will contain a portrait of S. J. Capper, Esq., F.L.S., F.E.S., &c., President of the Lancashire and Cheshire Entomological Society. Other portraits are in rapid preparation.

Arrangements are now completed for continuing the Molluscan Section W. A. Gain, Esq., of Tuxford, Newark, has kindly undertaken the Land and Fresh Water Mollusca, and Brocton Tomlin, Esq., of The Green, Llandaff, will attend to the Marine Section. Communications may be made to either of these gentlemen. All letters requiring a reply by post should contain stamp.

The Section for Coleoptera is conducted by G. A. Lewcock, Esq., 73, Oxford Road, Islington, to whom also direct communication may be made.

Mr. Lewcock also represents the Magazine in London, and will receive subscriptions, papers, and notes for publication, &c., &c.

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3. **Fungi, Lichens, etc.** By Peter Gray.
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Mollusca.

CONCHOLOGY IN WINTER,

BY W. A. GAIN.

Now the snow has left the ground bare we may recommence our hunting. Although not quite so enjoyable as in the summer and autumn months a snailing ramble may be both pleasant and productive. Most species are now in their winter quarters, and when their retreat is found a good haul is the usual result.

Hyalina may be found crowded under stones and bricks lying on the ground, many *Helices* and slugs occupy similar positions. Among the dead leaves in woods we may generally find *Vitrina* as well as several species of *Hyalina*, *Helix aculeata*, *Helix pygmæa*—this species should be carefully looked for on any piece of dead branch which may be turned up among the leaves—*Clausilia rugosa*, *Cochlicopa*, and other species in abundance; this, too, is the place for *Arion intermedius*, especially if the locality is rather more than usually damp, in this case *Carychium minimum* is also pretty certain to be found. Old walls with loose stones should be examined, and the grass pulled up from their bases, where close to the wall many small species may often be found.

The gregarious habits of slugs and snails may be well observed at the present season; a few days ago I lifted, one after another, a number of bricks lying in an orchard, I found only *Agriolimax agrestis*, *Hyalina alliaria*, and *Helix hispida*, they were in considerable numbers, and among the examples of the first I found an example of usual markings, but what was particularly worth remarking was that although in some cases the bricks almost touched, each brick sheltered one species only. The loose bark on trees should never be overlooked, beneath this many species may be found at this season, it is the most likely place to find *Balia perversa* in company with *Clausilia rugosa* and other common species. The debris left near rivers and streams by the recent floods should be diligently examined, among the piled-up material may be found shells of every species inhabiting the drainage area, land and fresh-water, many of course will be dead shells, very dead, as my friend used to say, that is, having lost the epidermis, but many will be in very fair condition, and rare species and varieties are pretty certain to occur; the *Vertigos* are always well represented, in some cases they may be collected by thousands.* I have found the rare *moulinsiana* a few times in this way, and in this way only. There is no other method so good to obtain a knowledge of the inhabitants of a district as a search amongst these deposits. Many living mollusks which have taken refuge here will also be secured.

Conchologists having beetle-loving friends will do well to take a bottle with them in which to put these insects which abound in such situations, and will doubtless be appreciated by the recipients.

Tuxford.

Notes.

Mr. Roebuck has made some interesting remarks on a collection of live slugs which I sent him last summer from Guernsey. He detected all four *Arions* among them; one adult *Arion ater L.* had a bright orange fringe and deep yellow foot, while the animal itself was drab colour. "This," Mr. Roebuck says, "it is difficult to assign to any named variety, it partakes of more than one,—*e.g.*, it is var. *marginata* by the colour of the fringe, added to the body-colour variety for which there seems to be no available name." The varieties *rava* and *plumbea* of *Amalia gagates* also occurred.

My attention has been drawn by Mr. J. T. Marshall to the fact that Dr. Jeffreys, subsequent to the publication of his "British Conchology," recognised the *Odostomia ventricosa* of Forbes as a distinct species in the †Report on the "Lightning" expedition. He had hitherto considered it a variety ‡ of *O. acicula*, Phil., from which it is distinguished by more tumid whorls and consequently deeper suture. The shell is also thinner in texture. The modern process of dismemberment among the genera has severed the group to which these species belong, from *Odostomia*, under the name of *Eulimella*. *O. scillæ*, and *O. nitidissima* are its only British representatives. We note that Canon A. M. Norman puts down *O. ventricosa* as a distinct species in his printed catalogue. While on this genus, it may be worth recording that Monterosato has recently described the British "*O. pusilla*" as a new species (*O. innovata*, Monts.,) on the ground that its sculpture differs from that of the true *O. pusilla*, Phil. The difference, whether of specific value or not, seems to consist in a curving of the ribs (*costis arcuatis*).

---

*I shall be happy to supply a quantity of such material, from which all the coarser rubbish has been separated, to any reader who will send me a box and return postage.

† Proc. Zool. Soc, 1884, page 363.

‡ Brit. Conch, Vol. IV., page 172.

As regards decollation, I am enabled to add *Limnaea truncatula* to the British list on the authority of Mr. W. E. Collinge. He also confirms me as to the bleaching of the apex in *Clausilia*—in the case of *C. rugosa* at Ingleton, and *C. laminata* at Wetherby. Moquin-Tandon mentions *Clausilia*, *Cyclostoma*, and *Limnaea* as the French genera in which decollation occurs, and also records the occurrence of a colony of *Planorbis vortex*, in which each shell had a little hole through the centre, where the first whorl ought to have been. I should of course have already mentioned *Cyclostoma elegans* as another frequently decollate shell. Many of the foreign forms of this genus and of its allies, such as *Tudora*, *Adamsiella*, and *Pomatias*, habitually lose the the apex of their shells in maturity. *Cylindrella*, with nearly 200 species is a good instance of an habitually decollate genus; while *Pirena*, *Telescopium*, and *Cerithidea* are usually the same, but may be obtained faultless in favourable localities,—the loss of apex depending, (as in all aquatic genera) on the character of the water. This influence seems especially to affect estuarine species, which live on muddy flats and are subject to the changes of tide. Take the genus *Hydrobia*, essentially a native of brackish water; of *H. ventrosa* there is a var. *decollata* chronicled in Jeffreys, while we have received from Canon Norman a var. *truncata Norm.* of *H. ulvae* from Brodick essentially similar in characteristics.

Dr. Sterki, the American authority on *Pupa*, has just been turning his attention to our little friend *Helix pulchella* and its forms. He is a firm believer in the specific validity of what we know as var. *costata*. Now that this point has been revived, it will be well for English collectors to give the results of their experience. Dr. Sterki says that he can recognise a *costata* even when ribless, by the depression of its spire and the more rapidly increasing whorls. Comparison of series from the same locality would be most valuable and we urge collectors who have the opportunity, to corroborate or refute the value of these characteristics.

Limax agrestis, L., put in appearance about 7 years ago on the Pacific coast of North America, and is now as great a garden pest as with us. It is especially flourishing in San Francisco and Victoria, B.C.—B. Tomlin, *The Green*, *Llandaff*.

On the Variation in the Banding of Helix.—The subject of band-variation in the various species of *Helix* has for a considerable time occupied the attention of naturalists, and yet our knowledge of the cause or causes that give rise to such a multiplicity of forms is very deficient. It seems to me that the collecting of these variations will add very little to our knowledge, certainly a good result has been the formulating a system by which their various variations may be represented. A step in the right direction has been made by Mr. Gain, which I wish to supplement by a few observations of my own.

In the Spring of 1888, I collected large numbers of *H. nemoralis* and *H. hortensis*, which were confined in large glass cases. As far as I could ascertain, in only one case did *H. nemoralis* pair with *H. hortensis*, but no ova were deposited. Dark banded forms sometimes paired with light banded examples, and *vice-versa*. In all the examples I was able to trace, the young bore little resemblance to the parents except in a very few instances. Where the parents were alike, the progeny were also, with few exceptions, and in these the variation was very slight.

Experiments with *H. aspersa* give a like result. There was always a slight difference in the young in either the shading, thickness of the shell or banding, indicating, I thought, a reversion to the type.—WALTER E. COLLINGE, *Assistant Demonstrator in Zoology, St. Andrew's University, and Editor of the "Conchologist."*

Reports of Societies.

ENTOMOLOGICAL SOCIETY OF LONDON.

January 27th.—The 59th Annual Meeting, adjourned from the 20th inst. on the death of H.R.H. the Duke of Clarence, Mr. F. DuCane Godman, F.R.S., President, in the chair. An abstract of the Treasurer's accounts, showing a good balance in the Society's favour, having been read by one of the Auditors, the Secretary, Mr. H. Goss, read the Report of the Council. It was then announced that the following gentlemen had been elected as Officers and Council for 1892:—President, Mr. Frederick DuCane Godman, F.R.S.; Treasurer, Mr. Robert McLachlan, F.R.S.; Secretaries, Mr. Herbert Goss, F.L.S., and the Rev. Canon Fowler, M.A., F.L.S.; Librarian, Mr. George C. Champion, F.Z.S.; and as other Members of the Council, Mr. C. G. Barrett, Mr. Herbert Druce, F.L.S., Captain Henry J. Elwes, F.L.S., Prof. Raphael Meldoa, F.R.S., Mr. Edward B. Poulton, M.A., F.R.S., Dr. David Sharp, M.A., F.R.S., Colonel Charles Swinoe, F.L.S., and the Right Hon. Lord Walsingham, LL.D., F.R.S. It was also announced that the President would appoint Captain Elwes, Dr. Sharp, and Lord Walsingham, Vice-Presidents for the Session 1892-3. The President then delivered an Address. After alluding to the vast number of species of insects and to the calculations of Dr. Sharp and Lord Walsingham as to the probable number of them as yet undescribed, he referred to the difficulty of preparing a monograph of the fauna of even a comparatively small part of the world, *e. g.*, Mexico and Central America, and certain small islands in the West Indian Archipelago, upon which he, with a large number of competent assistants, had been engaged for many years. The examination of the collections recently made in St. Vincent alone, had obliged him to search the whole of Europe and North America for specialists; and similar collections from Grenada were still untouched in consequence of the number of workers being unequal to the demands upon their time. He observed that the extent of the subject of Entomology was so vast that nothing but a systematic and continuous effort to amass collections, work them out, and preserve them, could place us in a position to proceed safely with the larger questions which followed the initial step of naming species; and it would only be by the steady effort of our Museum officials, not only to work at the subject themselves, but to enlist the aid of every available outside worker, that substantial progress can be made. The President concluded by referring to the losses by death during the year of several Fellows of the Society and other Entomologists, special mention being made of Mons. Edmond André, the Duke of Devonshire, Mr. F. Grut, Mr. E. W. Janson, Prof. Felipe Poey, Sir William Macleay, Mr. H. Edwards, Mr. Robert Gillo, and Dr. J. M. J. Af Tengström.

February 10th.—Mr. Frederick DuCane Godman, F.R.S., President. in the chair.

The President nominated Lord Walsingham, LL.D., F.R.S., Mr. Henry John Elwes, F.L.S., and Dr. D. Sharp, M.A., F.R.S., Vice Presidents for the session 1892-93.

Mr. E. Mayrick exhibited a number of specimens of *Euproctis fulviceps*, Walk., taken by Mr Barnard, showing the extraordinary variation of this Tasmanian species, all the males of which had been "sembled" by one female. The males were represented by various forms ranging from black to white, which had all been described as distinct species. Dr. Sharp, Mr. Hampson, Mr. McLachlan, Colonel Swinhoe, Mr. Elwes, Mr. Tutt, Mr. Poulton, and Mr. Jacoby took part in the discussion which ensued.

Dr. Sharp exhibited samples of pins which he had tried for preventing verdigris, and stated that silver wire was the best material to use, as insects on silver pins remained intact, whilst those on gilt pins were destroyed by verdigris.

Mr. G. T. Porritt exhibited a series of specimens representing Huddersfield forms of *Polia chi*, including nearly melanic specimens, found there during the last two seasons. He said these forms had not hitherto been observed elsewhere.

Mr. Tutt exhibited a series of *Hadena pisi*. comprising specimens very grey in tint, others of an almost unicolorous red with but faint markings, and others well marked with ochreous transverse lines. Three distinct forms of *Hadena dissimilis;* red and grey forms of *Panolis piniperda*, and a dark form of *Eupithecia fraxinata*; also a specimen of *Sciaphila penziana*. With the exception of the last-named, which was taken in Anglesey, all the specimens were taken or bred by Mr. Tunstall in the neighbourhood of Warrington.

The Rev. Dr. Walker exhibited specimens of *Arge titea*, *A. lachesis*, *A. psyche*, *A. thetis*, and other specimens of the genus from the neighbourhood of Athens; also specimens of *Argynnis phœbe*, taken in Grenada in May, 1891.

Mr. W. Farren exhibited a series of specimens of *Peronea variegana* var. *cirrana*, and *P. schalleriana* var. *latifasciana*, from Scarborough; *Eupecilia vectisana*, from Wicken Fen; and *Elachista subocellea*, from Cambridge.

Mr. G. A. Rothney sent for exhibition a number of species of ants collected by himself in Australia, in May and June, 1886, which had recently been named for him by Dr. Forel. The collection included:—*Iridomyrex pupurens*, Sm., *I. rufoniger*, Lowne, *I. gracilis*, Lowne, *I. itienerans*, Lowne, *Ectatomma metallicum*, Sm., *E. nudatum*, *E. mayyi*, *Aphænogaster longiceps*, Sm., *Polyrhachis ammon*, Fab., *Myrmecia nigriventris*, Mayr., and *nigrocincta*, Sm.; *Leptomyrmex erythrocephalus*, Fab., and a variety of *Campanotos rubiginosus*, Mayr., from Brisbane; also a few species from Honolulu, and a species of *Monomorium*, which Dr. Forel had not yet determined, and which he believed to be probably new.

Mr. C. O. Waterhouse read a paper entitled "Some Observations on the Mouth

Organs of Diptera," which was illustrated by numerous diagrams. A long discussion ensued in which Mr. Champion, Mr. McLachlan, Mr. Jenner Weir, Mr. Slater, Mr. Poulton, Mr. Distant, Dr. Sharp, Mr. Hampson, Mr. Elwes, and Mr. Barrett took part.

Mr. E. Meyrick read a paper entitled "On the Classification of the Geometrina of the European Fauna." Mr. Hampson, Mr. Elwes, Mr. McLachlan, Colonel Swinhoe, Mr. Tutt, and Mr. Distant took part in the discussion which ensued.—H. Goss, *Hon. Secretary.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

January 28th.—W. H. Tugwell, Esq., Ph. C., President in the chair. The Treasurer submitted his financial statement from which it appeared there was a balance of £48 to the Society's credit; the Council's Report was read by the Secretary and dealt with the work done during 1891. The election of officers was then taken and resulted in the election of Mr. C. G. Barrett, F.E S., President; Messrs. J. Jenner Weir, F.L.S., F.Z.S., F.E.S., and R. South, F.E.S., Vice-Presidents; Mr. E. Step Treasurer; Mr. W. West, Curator; Mr. D. J. Rice, Librarian; Messrs. H. W. Barker and A. Short, Secretaries; and Messrs. T. R. Billups, F.E.S., J. T. Carrington, F.L.S., C. Fenn, F.E.S., F. W. Frowhawk, F.E.S., J. Henderson, W. H. Tugwell, Ph. C., and J. W. Tutt, F.E.S., Council. Mr. W. H. Tugwell read his Presidential Address, and the meeting closed with votes of thanks to the various officers.

February 11th.—The President made some observations on taking the chair. Mr. J. Jenner Weir exhibited several species of the genus *Cymöthoe*, viz.: *theodota*, *æmilus*, *cænis*, *theobene*, and read notes with respect to the extreme sexual difference. The males in most cases were an ochreous or cream colour, more or less clouded with black, while on the other hand the females rarely had any of the ochreous or cream colour, and the markings were very varied and presented a very spotted appearance. M. Weir then pointed out the differences in the species exhibited. Mr. Weir also exhibited specimens of *Pieris napi*, L., and allied forms, which by some entomologists were considered distinct species or sub-species, and by others mere local varieties, and remarked that the object of the exhibition was rather to show the effect of environment and season of emergence on the intensity of coloration, both in the upper and under sides of the wings. Mr. Weir then contributed some interesting notes on his exhibit. Mr. Austin exhibited an extremely rare form of *Lycæna adonis* having the blue colour entirely suffused with black scales, and another example with beautiful markings on the upper side, both specimens were taken at Folkestone. Mr. Tutt, a bred series of *Hadena pisi*, L., varying from grey to deep purplish-red; three specimens of *H. suasa*, one with longitudinal striations; a small specimen of *Arctia villica*, the spots being very much reduced; three specimens of *Cerastis vaccinii*, one having the outer margin curved as in *spadicea* or var. *ligula; Ambyptilia acanthodactyla* and *A. punctidactyla*, bred from larvæ, and remarked that it was considered by some that these were distinct species. Messrs. Barrett, Weir, Carrington, Tutt, and Dobson made some remarks relative to this exhibit. Mr. Adkin showed smoky varieties of *Nemeophila plantaginis*. Mr. Farren, a long series of *Penthina variegano*, taken at Scarborough in September, and remarked that there was plenty of the ordinary form of the species, but the black form was as plentiful as the ordinary form. Mr. Billups, a larva found feeding on tomato from Teneriffe. Mr. Tutt expressed an opinion that it was *Prodenia littoralis*. Mr Herbert Williams, a dark varieiy of *Cosmia trapezina*. Mr. Billups read notes on shells obtained from drift collected by Mr. Barrett in Wales. Mr. H. Wallis Kew read a paper, "On the Dawn of Memory in the Animal Kingdom," and in the discussion which followed, Messrs. Dobson, Tutt, Weir, Barrett, and Wallis Kew took part.—H. W. BARKER, *Hon. Sec.*

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

Thursday, February 4th.—Exhibits:—Mr. Tutt, some very fine forms of *Cirrhœdia œerampelina* which he had received from the Rev. Joseph Greene, including examples of the var. *unicolor*, and the common British form, var *centrago*. He also exhibited *Hadena pisi* and *Trachea piniperda* (red and grey forms) and a melanic var. of *Eupithecia fraxinata*. Mr. Clark, four specimens of *Mixodia rufimitrana*, taken by Mr. Eustace Bankes, in Dorset. Mr. Battley, species taken in Epping Forest, including a small specimen of *Pieris napi* ♀, *Trichiura cratægi*, &c. Mr. Bayne, series of *Lithosia aureola* from Epping. Mr. Simes, insects from Epping, including *Vanessa polychloros*, *Dicycla oo*, &c. Mr. Sykes, a number of species taken near Enfield, including *Polia flavicincta*, &c. Mr. Nicholson, two varieties of *Pararge egeria*, the only specimens that emerged from a large brood; one without the eye-spots on the front wings, while the colors of the other had the appearance of being smudged into one another. Mr. Tutt expressed his opinion that this variation was due to disease, the cause being insufficient or innutritious food. Mr. Milton, species from Epping Forest, including *Eurymene dolobraria*, *Dicycla oo*, *Halias quercana*, &c.; also in Coleoptera, *Telephorus abdominalis*, *Hydrophorus 5-lineatus*, and *Pogonocherus fascicularis*, from Scotland. Mr. Burrows, *Carabus granulatus*, from Wanstead, and a series of *Bembidium 4-guttatus*, from Mitcham. Mr. Heasler, *Ischnoglossa rufopicea*, taken under rotten beech bark, and *Mycetoporus lucidus*, from boleti, both from Loughton. Mr. Riches, *Testacella scutellum*, and other slugs. Mr. Boden, fossils from the Gault clay at Folkestone. Mr. Bayne read a paper on "The Lepidoptera of Epping Forest." The following were the chief species observed:—*Thecla betulæ*, *Lycœna argiolus*, *Lithosia aureola*, *Pœcilocampa populi*, *Stauropus fagi*, *Dicycla oo*, *Rusina tenebrosa*, *Tapinostola fulva*, *Nyssia hispidaria*, *Amphidasys prodromaria*, *Geometra papilionaria*, *Eupithecia dodoneata*, and *E. exiguata*. Most of the members present took part in the discussion. The Secretary read a resolution recently pussed by the Council, announcing their intention to compile a list of the Fauna observed within a radius of ten miles of Charing Cross, and impressed upon the members the necessity for their co-operation.

Thursday, February 18th.—Exhibits.—Lepidoptera:—Mr. Raine, living larvæ of *Hepialus humuli*, also a large collection of preserved larvæ. Mr. Southey, bred series of *Notodouta ziczac* and *N. camelina* from Hampstead Heath. Mr. Tutt, fine forms of *Agrotis nigricans*, *A. tritici*, and *Xanthia aurago*, and continental types of *Agrotis helvetina*; also a *Setina* taken by Mr. Freer at Tintern, Monmouth. Mr. Tutt thought that it was *S. aurita* var. *ramosa*, of which he possessed specimens from the Engadine. Mr. Battley, a young larva of *Apamea ophiogramma*, about a quarter of an inch long, which he had found at the roots of ribbon-grass in his garden. He stated that this species hybernated as a very young larva inside the stems of the grass. Mr. Robson, a var. of *Bombyx rubi* with the lines forming the band running together at the inner margin; also a form of *Melanthia rubiginata* with the band extending right across the wing. Mr. Prout, a series of *Agrotis nigricans* from the Isle of Wight. Mr. Bacot, a number of *Hepialidæ*, including a very light form of *H. humuli* ♀. Mr. Clark and others also exhibited the genus *Hepialus*. Coleoptera:—Mr. Heasler, *Homalota splendens* and *Cleonus sulcirostris* from Mitchim. Mr. Lewcock, a long series of *Silpha atrata*, showing the pale forms from Orkney, and the var. *subrotundata* from Ireland. He pointed out that in the latter var. the margin of the elytra was very broadly developed, while in the Orkney specimens, the margin was in all respects similar to the type form. Mr. Lewcock also exhibited two pairs of *Nesites tardyi* from Dublin. Referring to this species, he said that in the male, the antennæ were inserted near the apex of the rostrum, while the female had the antennæ inserted nearer the base. The apex of the rostrum also was thickened in the male, and the reverse in the female. Messrs. Cripps, Burrows, and Southy also exhibited Coleoptera.—In Odonata, Mr. Simes exhibited (on hehalf of Mr. Wattson, of Clapton) a number of living larvæ and pupæ of *Libellulidœ*, *Æschnidæ* and *Agrionidæ*. Mr. Robson then read his paper on the genus *Hepiatus* of which the following is an abstract :—The female of this genus always deposited their ova whilst flying over the herbage. The eggs were unusually small for the size of the parent, white when extruded but quickly changing to black, whether impregnated or not. They were free from any adhesive matter, and soon reached the bottom of the herbage, and the larva when hatched made its way into the earth where it fed on underground roots and stems. The larvæ were all white in colour, some certainly lived more than one year before pupation. The pupæ were long, light brown in colour, and enclosed in a long silken cocoon, in which the active pupæ could move very quickly up and down, by means of raised knobs on the rings of the abdomen. The greatest interest attached to the perfect insects, which were easily recognisable by their long narrow wings, long slender abdomen, and extremely short antennæ. The manner in which the sexes attracted each other was curious and interesting. *Humuli* male flew back and forwards in an exposed place, with a pendulum like motion, the female flying to him by sight. Mr. Robson suggested that the sexes had at one time been similar in colour and markings like others of the genus, and that the necessity for the ♀ to see the ♂ led to the selection of the lightest coloured and largest specimens, until the present form was evolved. He pointed out that in Northern latitudes, where summer days where longer, that the process of evolution had been much slower, and that we had the intermediate stage in var. *Hethlandica*, of our Northern islands. *Hectus* ♂'s had a similar oscillating flight, but instead of flying in an exposed place, sought the shelter of some fern or bush, diffusing as they flew, an odour like ripe pine apple, which attracted the female. In the other three species the action was reversed. The ♀ resting on a strong stem, vibrated her wings continuously, diffusing thereby a faint odour as above which attracted the ♂'s. The ♂'s flew wildly and erratically about in search of the ♀ and so soon as they came within the range of the perfume, they changed their flight for a slower one, until they found the ♀. He dwelt at some length on the problem that if *hectus* males, lost their scent-producing power, and the females had to fly to them by sight, they would probably become larger and more silvery until a species like *humuli* would be evolved. He also pointed out that even in the hind wings, *hectus* often had silvery spots. The paper closed with a reference to some unsolved problems connected with the genus.

ERRATA.

P. 34, line 12, after "containing" add "three and two pupæ respectively. Mr. Tutt, two cabinet drawers containing."

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.

Monday, Feb. 8th.—The president Mr. S. J. Capper, F.L.S., F.E.S. in the chair Messrs. Henry Champ and W. H. Holt were elected members. Mr. W. E. Sharp read a paper entitled "Some remarks on the Hydradephaga of the District," illustrated with specimens and large coloured diagrams. The author referred to the general classification of the Celeoptera, and said that in the genus Dytiscus the whole physiology was to adapt them to less resistance in swimming. He then gave a resume of the records of local species, of which 74 species had been recorded out of

129 known to be indigenous to the British Isles; only four genera unrepresented. The president exhibited fine varieties of *Ennomos angularia*; Dr. Ellis, *Pulvinaria camellicola* (a rare species of coccus from camellia trees); Mr. Collins, 4 specimens of *Deilephila galii*, bred by him from 22 larva taken on *Epilobium angustifolium*, at Warrington in 1889, the specimens were small and were the only perfect ones bred, and a variety of *Noctua festiva*, with distinct black transverse lines on a uniform ground colour; Mr. Schill, *Hydrous angustior* from Milan, taken flying round electric light. Mr. Stott, a collection of Local Hydradephaga, and by Mr. Pierce, *Agrotis candelarum* from Saxony and its var. *Ashworthii*.—F. N. Pierce, *Hon. Sec.*, 143 *Smithdown Lane Liverpool.*

GUERNSEY NATURAL SCIENCE SOCIETY.

February 10*th*.—The usual monthly meeting was held on Wednesday, at the Guille-Allès Library, the chair being taken by Mr. J. Whitehead, President of the Society. There was a large attendance of members and visitors. Colonel J. G. Clooëte and Mr. A. C. Quick were elected members of the Society. Mr. W. A. Luff exhibited specimens of the Winter Moth *(Cheimatobia brumata)* which this winter is very plentiful in the island, though usually very scarce. Under the title of "A Glance at the Rocks of Alderney," Mr. C. De La Mare gave an account of a visit made by him to the island of Alderney on the 25th June last, and exhibited various specimens of the rocks which he collected on that occasion, describing their mode of occurrence, &c. The specimens of sandstone or grit justified the Rev. E. Hill's description quoted from his paper on Alderney, varying from pebbly sandstones to fine mudstones. Specimens of granite and intrusive dykes of mica trap and greenstone were also shown, the latter cutting the sandstone, and the effect of these greenstone dykes on the adjoining sandstone was adverted to. Various raised beaches were noticed, especially that in Plate Saline Bay, these beaches corresponding in their main features with those of Guernsey, and in some localities containing flints as in Guernsey. The present beach of Plate Saline Bay also abounds with flints, mostly of small size. Mr. De La Mare exhibited a diagram prepared by him showing the correlation of the Channel Islands' rocks with those of France and England. He stated that he considered the following points now fully established, viz.:—1st. That the Alderney grit is identical with the rock on the opposite coast of France known as the "*Grès feldspathique*." 2nd. That the Grès feldspathique" immediately underlies the *Grès Armoricain*," which is the oldest rock in North-Western France in which fossils have so far been traced. 3rd. That the *Grès Armoricain*" corresponds with the "Arenig Rocks" of Wales. From this it follows that the Alderney grit cannot be of more recent age than the Arenig Rocks, which are "Lower Silurian" according to the nomenclature adopted by the English and French Geological Surveys. Mr. De La Mare's remarks were listened to with much pleasure. A discussion followed in which several members took part, and a hearty vote of thanks was accorded to Mr. De La Mare for his lucid and interesting treatment of a difficult subject. For the March meeting, Mr. E. D. Marquand has kindly promised a paper on "The Language of Ants."—W. Sharp. *Hon. Sec.*

General Notes.

Luperina testacea var. nickerlii.—In the "Entomologist," Vol. XXII., pp. 271 and 272, I made some remarks on a form of *L. testacea* known as *L. nickerlii*, Freyer. At a meeting of the City of London

Entomological and Natural History Society, held March 19th, 1891, Mr. Tutt criticised my conclusions in his usual style, and, as is also customary with him when engaged in this kind of thing, indulged in a few misquotations. The society mentioned had a letter from me upon the subject, but this communication was not brought before the meeting. As the matter has been re-published in the recently issued "Transactions of the City of London Ent. and Nat. Hist. Society," I think it is due to myself to say a few words.

The insect referred to in the present note as Mr. Baxter's specimen, was an aberrant example of *L. testacea* which that gentleman had been good enough to send me to look at. Concerning this variety I wrote (l.c.) "In some respects the specimen agrees with Doubleday's description of *gueneei*, but it appears to be a form of *testacea* intermediate between *gueneei* and *nickerlii*." Commenting on this remark, Mr. Tutt says that I used *gueneei* as a link between Mr. Baxter's specimen and *nickerlii*, but it will be seen that I make Mr. Baxter's specimen the connecting link, and not *gueneei*. Then with regard to the three Bohemian specimens of *nickerlii* to which I referred in my note, Mr. Tutt appears to doubt whether they have anything to do with Freyer's *nickerlii*, because I describe one of them as "grey, tinged with ochreous," and the translation of the original description to which he had access, gives the colour as "reddish grey." Curiously enough, Mr. Tutt seems to accept Herrich-Schaffer's figure of *nickerlii*, although, as he says, it represents an almost *red-brown* insect; but if he desires to be consistent in the use of his colour test he must reject figure 565 of H.-S. I cannot, however, suppose that Mr. Tutt seriously attaches any importance to slight differences in the terms used to express colour, otherwise, he would have avoided giving two or three different tints to some of the numerous aberrations he has named from time to time. Take, for instance, his *Luperina testacea* var. *obsoleta*, (Entom., XXII., p. 206-207), he first says of this form that it is "clear whitish-grey." then he tells us that it is "pale greyish-white," and very shortly afterwards we are informed that the colour is "pale ochreous-grey."

Mr. Tutt says that I might have suggested the probability of *nickerlii* being a var. of *testacea*, and overlooks the fact that I wrote of *nickerlii*, "Dr. Staudinger considers it as probably a Darwinian species, and as it certainly is now linked up with *gueneei* by this Lancashire (Mr. Baxter's) specimen, the logical conclusion would appear to be that if *gueneei* is a variety of *testacea*, *nickerlii* cannot be a distinct species." Mr. Tutt has seen Mr. Baxter's specimen, but he has not seen the Bohemian specimens that I have examined, neither does he mention having seen *any* specimen of *nickerlii*, therefore I do not consider that he is justified in putting forward his opinion with such a show of authority.

No one in this country has been more active than Mr. Tutt in reducing *guenéei* to varietal rank, and yet his remarks on this variety do not in the least accord with the original description of the insect. In his table of the variation of *L. testacea*, var. *guenéei* is referred to as "pale greyish-white, with some of the markings indistinct;" the colour, in fact, is the same as that of var. *obsoleta* in the same table. Further on he says the insect is "of an extremely pale ground colour as in var. *obsoleta*, but differing from that variety in having most of the characteristic markings of *testacea* more distinctly marked owing to the paler ground colour." It would seem then, from the context, that although *obsoleta* is "an extreme pale" form; var. *guenéei*, Tutt, is still paler. The original description of *guenéei*, Doubleday, ("Ent. Ann.," 1884) is "anterior wings pale, testaceous, irrorated with black and white dots," etc. Again, a var. of *L. testacea* from Abbot's Wood:—"Very pale grey, with a few very indistinct black costal markings, all the markings of *testacea* faintly marked, the three stigmata traceable although indistinct, hind wings pale grey," is thought by Mr. Tutt to be "undoubtedly this variety," i.e. *guenéei*. Apart from the colour test in these cases, neither this last specimen nor either of the others mentioned by him agree with the description of *guenéei*. I will not, however, ask, as Mr. Tutt has done in a parallel instance, how these specimens can be referred to *guenéei*? because I am inclined to admit, although I have not seen them, that they may possibly be modifications of that form.

Returning to *nickerlii*, I may say that until Mr. Tutt can produce something more conclusive than his mere opinion, formed apparently on insufficient material and expressed in a hurry; or someone else convinces me that I am in error, I shall continue to regard Freyer's insect as a form of *L. testacea* and Mr. Baxter's specimen as intermediate between that form and *guenéei*.—RICHARD SOUTH, London February 8th, 1892.

V. CARDUI AT CAPE WRATH, SUTHERLANDSHIRE.—In July last I had the pleasure of spending nearly three weeks in Sutherland. I travelled from Lairg in the south, to Durness in the far north, and from there I wandered at my leisure along the wild Pentland coast till I reached Thurso in the distant east. I left with the prospect of doing a good stroke of entomological work, but I am sorry to say that during almost all the time I was away the weather was wet and stormy, and consequently insects were extremely scarce. One dry day a friend and myself were standing on a headland near Cape Wrath, watching a shoal of whales which were sporting in the firth below us, when a bright object fluttered out towards the water, turned, and dashed wildly about us. Wondering what butterfly it could be we tried to catch it, but only succeeded in frightening it away. It came back to the same spot and settled quite close to us, when I noticed it was a specimen of our old friend *V. cardui.* Notwithstanding our frequent attempts to capture it, it returned again and again, as if it were drawn by some strange attraction to this rocky headland. I am not sure if this species has ever been recorded for Sutherlandshire, but I daresay it would be hardly possible to record it for a more northern locality in this country than Cape Wrath. I spent two days at Strathay in the hope of taking a good supply of *C. ericellus*, but my usual "good fortune" attended me—it poured! I hardly went outside but I got drenched, and, of course, on the soaking mosses not a specimen was to be seen. Last year I was equally unfortunate, and I suppose it will be quite in keeping with my entomological luck if my holidays next summer in the far north should be of the usual "weet" character. In Durness I saw a few common species such as *L. didymata*, *A. grossularíata*, *A. polyodon*, etc., but the rarer species were quite absent.—John Mackay, 17, Dundas Street, Kingston, Glasgow.

Noctua conflua, Treitschke.—Mr. Tutt (ante p. 43) seems to imply that the report of his paper was not accurate, but he admits having seen this report before it was published, therefore he cannot blame anyone but himself if it was incorrect. Dr. Mason may or may not have made the statement concerning *conflua* which Mr. Tutt says that he quoted in his paper, but this does not affect the question at issue, *i.e.*, did the type of *conflua* come from Iceland? I think I have conclusively shown that it did not. By accepting, without verification, the statements of others, Mr. Tutt has been led into error, and, instead of gracefully retiring from his untenable position, he writes disparagingly of those who have ventured to correct his mistakes. Mr. Tutt says in his *Record* that my former remarks on this subject prove that I know nothing at all about it. His latest remarks upon the subject prove him to be an adept in the art of garbling, and I regret that he cannot, or will not, discuss the matter in a fair and impartial spirit. I only desire to establish the truth, and this is my sole reason for entering into discussion of this kind. I am not at all anxious to convict anyone of error, simply for the sake of what is vulgarly called "showing them up." In conclusion I may say that I did not suggest that *conflua* is a MS. name; but I said that it was a MS. name when sent by Treitschke to Boisduval, and that both Treitschke and Duponchel published their descriptions of *conflua* in 1827. I did not suggest that Boisduval knew nothing of Icelandic *conflua*, because I did not mention Boisduval's name in connection with the question of the locality. I did not suggest that

Dr. Staudinger first found and wrote about *conflua* from Iceland, but I did say that Iceland examples of *conflua* found their way generally into collections after the Doctor's return from the North of Europe in 1852.—RICHARD SOUTH, 12, Abbey Gardens, London, N.W.

NOCTUA CONFLUA.—Since former notes on this subject appeared, I have had the opportunity of examining the series above this name in the British Museum, and also Mr. Tutt's series. I am sorry to say that not the slightest reliance can be placed on the Noctuæ in the Museum, which are in a state of hopeless confusion, and without the slightest value for reference, specimens of *festiva* figuring over other names in various parts of the collection. Above the name *conflua* I noticed one specimen labelled "Polar Norwegen Borsekop, Std.," which is dark, but not so dark as my own specimens from Unst, and which has broad and very truncate wings. There did not appear to be any Icelandic examples of the species. Mr. Tutt has 13 specimens which he considers to be *conflua*. Two of them, in my opinion, do not agree with his own definition of the form; the others very fairly represent it, but after a very careful examination of his long series, the Museum series, and that of Mr. C. A. Briggs, I can only say that I have seen nothing to alter my previously expressed opinion, that *conflua* is not distinct from *festiva*, and I would now go further and say I have seen no form of *conflua* (so called), that can be separated from *festiva* even as a variety.—JOHN E. ROBSON, Hartlepool.

PHIGALIA PILOSARIA.—It is rather curious that *P. pilosaria*, has emerged earlier this year, notwithstanding the fact that last summer, autumn and winter have been very dreary quarters of the year, with but little sun. The following are the dates on which I have first seen the perfect insect during the last four years: 1889—February 11th; 1890—February 13th; 1891—February 16th; 1892—February 8th. WM. BROOKS, Rotherham.

Coleoptera.—Notes.

DROMIUS QUADRINOTATUS IN IRELAND.—In Vol. I., "Coleoptera of the British Islands, Canon Fowler states that *Dromius quadrinotatus* has never been recorded from Ireland. In July last I found two specimens of these beetles (one living, one dead) under Beech bark, at Foxrock, Co. Dublin. They were confounded with small specimens of *D. quadrimaculatus* in my collection, but they are plainly distinct.—H. GORE CUTHBERT, Dublin.

[The Rev. W. Johnson, Armagh, has previously recorded this species as occurring in Ireland, having taken "a number on trees, some under, and others on the surface of the bark." See "Gossiping Notes," *British Naturalist*, Vol. I., p. 3.—G.A.L.]

Silpha atrata in Ireland.—In the November issue of the *British Naturalist*, Mr. Brown states that he never took an example of the type form of *S. atrata* in Dublin. On August 3rd last I took a fine specimen of the typical *S. atrata* near Glencullen, at the extreme south of the country.—H. Gore Cuthbert, Dublin.

[Canon Fowler, (Coleoptera of the British Islands), says that the species is "apparently represented mostly in Ireland by the var. *subrotundata*."—G.A.L.]

NOTES FOR BEGINNERS.—MICRO LARVÆ FOR THE MONTH.

GEO. ELISHA, F.E.S.

With March we commence another Entomological campaign, for the signs of approaching spring are becoming every day more evident, the drooping heads of the coltsfoot are now bursting into flower, the hazel catkins gradually fading, while those of the sallow are slowly unfolding, then soon their attractions will draw hosts of insect admirers; the hedges begin to assume a greenish tint, and the wild plants under them are now growing vigorously, and while strolling through the woods we observe the signs are still more visible, for the honeysuckle is now getting well into leaf and the curious flowers of the butcher's broom, which appear as if in the centre of each leaf, are now to be seen where that plant occurs. At our feet the wood anemone is putting forth its delicate white blossoms, while that harbinger of spring, the humble bee, occasionally reveals its presence by that old familiar humming noise which has so long been unheard.

We must not forget while observing these and many other ever welcome precursors of the genial weather, that is surely, though perhaps slowly approaching, that we have another object in view, and that is to unravel, if possible, some of those mysteries of larval life and habits of the numerous species of Micro-lepidoptera that have hitherto eluded our most persistent efforts to discover them, but as a reward in this direction comes so seldom, we will give our attention to some of those species occurring at this time, that may be useful to our friends, if not to our own collection.

One of the first objects that attract our notice, while leisurely walking along any country lane this month, is the long blades of fresh looking grass on the hedge banks; on examining some of these, we shall observe that they have broad mines running nearly the whole length of the leaf; on holding one of these up to the light, a pale yellowish larva will be seen busily eating the parenchyma between the upper and lower cuticle, this is the larva of *Elachista* *ruficinerea.* In some of the leaves of the coarse grass growing up on the hedge itself, the dark green larva of *E. megerlella* will be found mining in a similar manner, as also a few others of the same genus in other grass leaves. The black horehound *(Ballota nigra)*, now getting high, have their leaves quite disfigured at this time by brownish blotches caused by the larva of *Coleophora lineola* which are now feeding voraciously, and on the leaves of the bird's-foot trefoil *(Lotus corniculatus)* the larva of *C. discordella* is making the usual blotches; the stitchwort *(Stellaria holostea)*, which is now growing fast, have some of the topmost shoots already drawn together and distorted by the larva of *Gelechia tricolorella*, towards the end of the month; and on the underside of the leaves, the sfender cases of the young larva of *C. solitariella* will now be seen again at work after their long hibernation.

We will now take a stroll through some old wood to see what it will produce. Before entering we have to cross a boggy piece of ground in which some large roots of rushes are pretty plentiful. On examining the seed heads we soon find the whitish cases of *C. cespititiella*, mostly between the seeds at this time. On the edges of the main drive are some fine bushes of the common broom, if we examine them we shall find some of the twigs are joined together by a slight web, on pulling them apart we shall see the brown larva of *D. assimilella*, it is best to cut off good sized pieces with the larvæ, keep them in a cage with plenty of ventilation, and out in the open air, or the broom will very soon go mouldy. We must also take a good supply of catkins from those fine white poplars yonder, for we may then breed some beautiful specimens of *Graph. nisana* and *E. nana.*

The old dead stems of thistles scattered about it the open parts, we can see by the sawdust-looking substance exuding from the sides, contain the larva of *E. pflugiana* and possibly *circiana.* We will take a good supply, for the difference in the ♂ and ♀ of the former is best seen in the bred specimens. We will now examine the leaves of the sallows, and are soon busy filling a tin with the cases of *Col. viminetella*, which are again beginning to feed, although the leaves are barely expanded, and at the same time fill a bag with the catkins, many of which are already on the ground, for we shall then obtain a nice series of *Argyresthia pygmæella.* We will now give our attention to some of those young Fir trees scattered in the open parts, and are soon rewarded by the larva of *R. turionana;* these larva feed inside the topmost shoots and those of the main branches, they are soon discovered by the resinous exudation their presence in the interior causes to accumulate on the outside of the shoot.

There are some fine old Birches here and there, among these young Fir trees that look very tempting, for they are loaded with catkins, we will examine some of these, and if we find traces of larvæ we must fill another bag, for we may breed from them specimens of *P. bilunana* and *E. nana*. On leaving these Birches and strolling on, we notice the Larch trees have the tips of the leaves of the lower branches very much bleached by the operations of the larva of *C. laricella*, the cases of which are whitish, but rather small at present and are found on the underside of the leaves, we will take some of these for they are not common everywhere. As we are leaving the wood we notice the *Genista anglica* growing rather plentifully near the furze bushes, is already bearing traces of the work of *C. genisticollela*, we will leave these for another month at least, when we shall find them much larger and have a better chance of rearing them, and in the lane we shall now and then find the larva of *T. emyella* in the leaves of brambles close under the hedges and on ballast heaps, or on railway banks where the coltsfoot is growing freely, we can now find the larva of *P. trygonodactylus*. These larva when full grown spin together the downy substance of the seed head and change to the pupa state there.

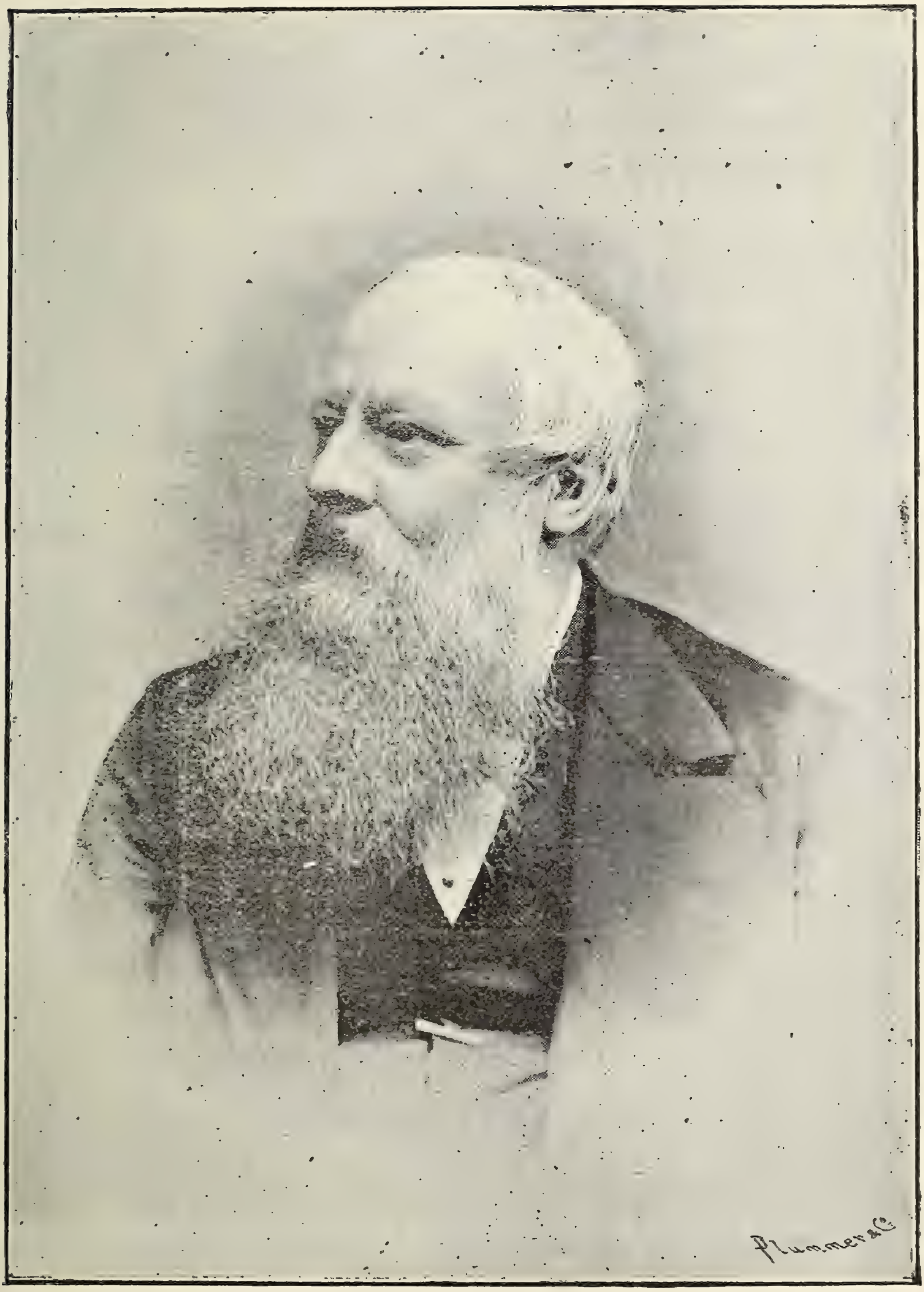
It is as well to get all we can of the above as soon as possible, although many are to be taken next month, but the number of species then occurring in the larva state give us plenty of occupation for any amount of leisure time we may then have at our disposal, and now having completed the round of the twelve months, and given some of my young friends a few directions as to collecting larvæ of the Micro-lepidoptera for each as it arrives, I leave them for a time, hoping that some may become students of this interesting group, the interest of which increases, the more their life-histories and habits are investigated.

Shepherdess Walk, City Road, London, N.

NATURALISTS OF THE DAY.

III.—SAMUEL JAMES CAPPER, F.E.S., F.L.S., &c.

The gentlemen whose portrait appears to-day was born in London on the 28th April, 1825. He appears to have had an "inborn love of Lepidoptera," which was strengthened and developed by being sent to a boarding school, at Epping, where the brothers Doubleday, and especially Henry, did their best to encourage the schoolboys in their natural history pursuits. He remembers being present one Sunday at a Friends' meeting, when a specimen of *Catocala nupta* dashed about the room for a time, then flew to one of the windows, when Henry



SAMUEL J. CAPPER,

F.E.S., F.L.S., ETC.,

President of the Lancashire and Cheshire Entomological Society.

BRITISH MUSEUM NATURAL HISTORY.

Doubleday quietly left his seat and captured the prize to the great amusement of the congregation. After leaving school, Mr. Capper, for a time, had no opportunity or leisure for following his favourite pursuit, but when he settled in Liverpool he became acquainted with the late Benjamin Cooke, who induced him to send for his cabinet and collections. He quickly made other entomological friends, and as soon as an opportunity afforded, resumed his collecting. From that time his interest in Entomology has never flagged. In the year 1874 he met with an accident when collecting at the top of Penmaenmaur, where he had re-discovered *A. contiguaria.* From this he has never entirely recovered, and has been since then too lame for active collecting. Unable to take the field, he determined to bring Entomology to him, and in 1877 the Lancashire and Cheshire Entomological Society was commenced at his house, Huyton Park, on the 26th March. Mr. Capper was the first President, which post he has held for fifteen consecutive years, with honour to himself and profit to the Society. Since then his work has been much merged in that of the Society under which much useful work has been done.

With the exception of Mr. Webb's collection at Dover, Mr. Capper's is one of the best out of London. It is wonderfully complete, and includes a very large number of interesting and valuable varieties. He has also an extensive "Educational Collection," comprising type specimens of all orders of insects, with representatives of them in their earlier stages also. Both collections are always open to Entomologists, either for study or to enable them to name their specimens. Mr. Capper has not written much, but his Annual Address to the members of the Society is always interesting, and generally contains most suggestive material in relation to the advance of Entomological Science.

THE PTEROPHORINA OF BRITAIN,

BY J. W. TUTT, F.E.S.

(Continued from page 256, Vol. I.)

Marasmarcha phæodactyla.—This single-brooded and sexually dimorphic species is locally common in the South of England, where its food plant *Ononis* grows.

SYNONYMY—*Phæodactyla*, Hb. 14; Tr. IX., 2, 240; Zell. "Isis," 1841, 834, "Linn. Ent. Zeit.," VI., 356; Dup. XI., 313, 10, p. 657; Sely's En. 25, 7; H.-S., V., p. 378; Frey 410; Sta. "Man." V, p.

442; Tutt, "Ent. Record," I., p. 92. *Leucadactyla* ♀, Haw. "Lep. Brit." p. 477. *Lunædactyla*, ♂, Haw. "Lep. Brit.," p. 477; Stphs. "Ill.," IV., 375; Wood 1640.

In the "Entomologist's Record" &c., Vol. I., p. 92, with reference to the synonymy of this species, I wrote:—"*Phæodactyla*, Hb.=*leucadactyla*, Haw. ♀, *lunædactyla*, Haw. ♂. Another sexually dimorphic species-*phæodactyla*-appears, like *tetradactyla*, to have had the sexes named as distinct species by Haworth. The female, from its pale colour, being called *leucadactyla* (the lemon plume); the male, from the characteristic lunar mark on the anterior wings, being called *lunæodactyla* (the cresent plume). Both these names sink as synonyms of Hübner's *phæodactyla*, Hübner figuring (14, 15) both sexes of this species under the latter name. Wocke, in his "Catalog," gives *lunædactyla*, Haw., 477, as synonymous with *phæodactyla*, but not *leucadactyla*, the paler form."

IMAGO—The male of this species has the wings of a dark cinnamon brown, the colour of the female being much paler and more ochreous. The anterior wings are divided into two lobes, with a pale lunar mark extending from the costa to the inner mark just before the fissure, the costa rather darker than the rest of the wing. The posterior wings are divided into three plumules, of almost the same colour as the fore wings but more shiny. The head, thorax, and abdomen the same colour as the wings, the abdominal segments being rather paler. The fore wings of the female shorter proportionally than those of the male. Stainton's diagnosis is:—"F.-w. 10‴-11‴, ochreous-brown, with a pale ochreous curved fascia just before the fissure" ("Manual," II., p. 442). I made the following description of Hübner's figures:—"Fig. 14, ♂. Anterior wings blunt at apex, reddish-grey in colour, but redder on the margin; an orange mark near the base on the inner margin; an angulated transverse line at end of fissure; a very faint line on upper lobe, near apex." "Fig. 15, ♀, a little paler and larger than the male, but markings the same" ("Sammlung europ. Schmet." figs. 14-15). The imago, larva, and pupa are figured (the former very unsatisfactorily) in the "Entom.," Vol. XVI., No. 239).

LARVA—This larva is excessively abundant on *Ononis* in the Dover district in June, feeding on the leaves of that plant. It varies somewhat in colour, from pale whitish to bright green, very rarely with a brown tinge. The tubercles are supplied with hairs. The larva is described at length by Mr. South as:—"Length 7 lines; moderately stout, tapering towards anal extremity. Head smaller than second segment, whitish, tinged with green; crown, sides, and spot on each cheek shining black; mandibles blackish-brown. Ground colour green, segmental divisions paler, dorsal line bluish-green. Tubercles, four dorsal rows (four on each segment) black, each with a moderately long grey hair, and tuft of shorter bristles; the inner rows of warts are situate towards the anterior, and those forming the outer rows towards the posterior edges of segments; sub-dorsal, a black wart on each segment, with a moderately long grey hair, and tuft of short white bristles; spiracular, two small black contiguous warts on each segment, emitting whitish hairs. Pro-legs and claspers semi-transparent, dotted with grey. Food, rest-harrow (*Ononis*); feeds on the terminal leaves. June ("Entomologist," Vol. XVI., pp. 75-76).

PUPA—The pupa is usually attached to the food plant but sometimes to other objects near. It varies somewhat in colour but is generally of some shade of green. It is also covered with hairs like the larva. It may be found in June and July.

TIME OF APPEARANCE—The imago is abundant in many localities in the chalk in July and the early part of August, but it is perhaps on the wing a shorter time than almost any other British species, two or three weeks being the utmost limit. In 1888, the species was not out until the first week in August. I have known it out the second week in July, but the third and fourth weeks of the latter month are generally the best to obtain this species.

HABITAT—The species seems somewhat restricted in England and does not appear off the chalk, so that it is more essentially confined to the South of England. I have taken it abundantly at Dover, Folkestone, Cuxton, Isle of Wight and Stainton records it from Alkham, Cambridge and Mickleham, Mrs. Hutchinson records it from Leominster, "rarely," whilst the Rev. O. P. Cambridge writes:—"*M. phæodactylus* is found in one spot only, near Bloxworth, but is common there" (*in litt.*) Staudinger and Wocke give as its range:—"Germany, Switzerland, England, France, Italy, Greece, Eastern and Western Russia" ("Catalog," p. 343).

Mimæseoptilus, Wallengren.

In the structure of the imago this genus (as previously constituted) presented two very distinct types, of which *phæodactyla* and *pterodactyla (fuscus)* may be taken as the prevailing forms. *Phæodactyla* appears to me generically distinct from the rest of our British *Mimæseoptili*, and Dr. Jordan has before remarked the peculiarities of this genus, but Zeller was perfectly convinced that its true position was here, and I believe it was only in deference to Zeller's opinion that the species was not long ago removed from its position in this genus. Next to *Aciptilia* this is the largest Palæarctic genus, but, strange to say, the genus is scarcely known in America, only three species being mentioned by Dr. Jordan in the "Entomologist's Monthly Magazine," Vol. XVIII., p. 121. Neither of the American species appears to occur in Europe. In Britain, we have (excluding *phæodactyla*) three species, but many other names occur in our lists which would appear to be synonymous with *bipunctidactyla*. In the Palæarctic area, Dr. Staudinger gives 19 species, although some of these are only doubtfully distinct and some belong to *Marasmarcha*.

Wallengren thus characterises this genus:—"Antennæ of the male fringed with very short hairs. The frontal tuft raised into a blunt cone. Palpi longer than the head, compressed laterally, the middle joint thickened above with hairs, the last joint short, blunt, scarcely to be distinguished from the preceding. The posterior tibiæ slender, not thickened. The first pair of spines in the posterior tibiæ equal, the second pair slightly unequal. The anterior wings cleft to a third part of their length, the segments more slender, the upper one with a distinct posterior angle. The posterior lanceolate with the posterior angle not well-defined. The segments of the posterior wings slender, the middle segment dilated so as to be somewhat spoon-shaped, the third or posterior division without any black scales in its short fringe. The anterior wings not perfectly flat, their anterior margin being very slightly deflexed, their inner margin without a tooth, and, when at rest, slightly deflexed, so as to embrace the posterior wings. The veins of the anterior wings ten in number; the 1st and 2nd separate from the base, the 3rd from the posterior margin of the cell, and the 4th and 5th together from the posterior angle of the cell, all running into the posterior segment; the 6th rises from the little transverse vein near the anterior angle of the cell, and the 7th, which is two-branched, rises from the angle itself, these run into the anterior segment; the 8th and 9th arise from the anterior margin of the cell, and run into the anterior margin of the wing; the 10th arises from the base of the wing and runs along its anterior margin. The cell is distinct, closed, with a very slender, spurious, transverse veinlet, moderately curved, with the convexity turning towards the base of the wing. The veins of the inferior wings are four in number; the 1st two-branched ending in the first segment, the 2nd two-branched, ending as well as the simple 3rd vein in the second segment (this 3rd vein generally joins with the 2nd at the base), and the 4th vein simply ending in the third segment. No cell" ("Entomologist's Monthly Magazine," Vol. VI., p. 123).

Mr. Meyrick, for no apparent reason whatever, has sunk Wallengren's name for this well-characterised genus, and brought to light an old generic name of Hübner's which he has had to describe himself. Considering Wallengren's excellent work, Mr. Meyrick should have been satisfied with separating *phæodactyla*, for which he wisely constructed a new genus, without re-describing an already well defined and natural genus.

EXCHANGE.

*Lepidoptera marked * are bred.*

EXCHANGE.—Wanted to exchange "The Naturalist," from August, 1884, to December, 1891 for "The Midland Naturalist," Conchological Books, or Shells.—W. A GAIN, Tuxford, Newark.

DESIDERATA.—A. prunaria, G. obscurata, E. heparata, L. flavicinclata, M. rubiginata, M. hastata, tristata, S. undulata, C. russata, immanata, and very many common species. I will endeavour to make a good return.—JOHN E. ROBSON, Hartlepool.

EXCHANGE.—Duplicate clutches of Sooty and Noddy Terns, Manx Shearwater, Mute Swan, Golden-winged Woodpecker, American Robin, Tits, Buntings, and others. Wanted other sorts of sideblown eggs with data, &c.—F. W. PAPLE, 62 Waterloo-street, Bolton.

EXCHANGE.—Wanted, British Coleoptera and Lepidoptera, or books on Entomology, in exchange for Periodicals.—THOS. W. WILSHAW, 455 Shoreham-street, Sheffield.

EXCHANGE.—Duplicates:—Hesperia lineola in good condition. Desiderata:—Hastata, Bajularia, Saponaria, Lunaria, &c.—F. MILTON, 184 Stamford Hill, London, N.

DUPLICATES.—British Coleoptera, a few Hemiptera and a few land and marine shells—Desiderata, Coleoptera, Lepidoptera, and other orders and named types of British and foreign shells.—A. FORD, Claremont House, Upper Tower Road, St. Leonards-on-Sea, Sussex.

EXCHANGE—Duplicates—Aglaia, Cardamines, Sylvanus, Alexis, Ulmata, Jacobæa, Auriflua, Rubiginata, and Chi, Desid. Numerous.—F. EMSLEY, 98, West Street, Leeds.

EXCHANGE, DUPLICATES.—Alexis, Artaxerxes, Carpini,* Plantaginis,* Velleda, L. dispar,* Illustraria,* Suffumata, Ribesiaria, Conigera, Nictitans, Tenebrosa, Tritici, Valligera, Lucernea, Festiva vars., Neglecta, Suspecta, Rufina, Adusta, Dentina, Solidaginis.—WILLIAM COWIE, 5, Canal Street, Aberdeen, N.B.

EXCHANGE.—Wanted Tertiary fossils, named and located. Offered in return Mediterranean shells, lepidoptera, &c., state desiderata; offered also Foraminifera, mounted or unmounted.—J. H. COOKE, Highland House, St Julian's, Malta.

Desiderata, Formicæformis, Culiciformis, Porcellus, Statices, Rubricollis, Complana, Lurideola, Sericea, Caniola, Pygmæola, Deplana, Aureola, Griseola, Stramineola, Muscerda, Mesonella, Miniata, I will endeavour to make a good return.—JOHN E. ROBSON, Hartlepool.

Australian Bird's skins and eggs, and other natural history specimens offered in exchange or Cretaceous fossils or skins and eggs of British birds.—J. HAMMERTON, JUNR., c/o Hammerton and Son, Geelong, Victoria.

EXCHANGE.—Colquhounana,* Musciformis,* Carmelita, Trepidaria,* Desiderata.—Numerous.—H MURRAY, Lowbank Villas, Carnforth.

EXCHANGE—Wanted good Botanical Sections. Will give a packet, of which I have six ifferent, of Micro-material from New Zealand for each slide.—W. A. GAIN, Tuxford, Newark.

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TO CORRESPONDENTS.

By reducing the leads between the lines, space equal to nearly three additional pages has been gained, without giving the Magazine the crowded appearance that is so painful to read.

A portrait of S. J. Capper, F.E.S., &c., is given with the present part, forming the third of a series of portraits of Naturalists of the Day.

The April part will contain a portrait of Miss Ormerod, F.E.S., &c., Consulting Entomologist to the Royal Agricultural Society. Other portraits are in rapid preparation.

Arrangements are now completed for continuing the Molluscan Section. W. A. Gain, Esq., of Tuxford, Newark, has kindly undertaken the Land and Fresh Water Mollusca, and Brocton Tomlin, Esq., of The Green, Llandaff, will attend to the Marine Section. Communications may be made to either of these gentlemen. All letters requiring a reply by post should contain stamp.

The Section for Coleoptera is conducted by G. A. Lewcock, Esq., 73, Oxford Road, Islington, to whom also direct communication may be made.

Mr. Lewcock also represents the Magazine in London, and will receiv subscriptions, papers, and notes for publication, &c., &c.

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Mimæseoptilus bipunctidactyla, Vill. (?), Haw.—This species, which has two very distinct broods appearing normally in early June and August, has received several names owing to the variation of the imago and different food plants of the larva.

SYNONOMY—*Bipunctidactyla*, Villers, "Linn. Ent.," 2.535, 1092?; Haw., "Lep. Brit." 476; Sta. "Man.," II., p, 442. *Serotinus*, Zell. "Linn. Ent. Zeit.," VI., p. 361; H.-S., V., p. 376; Tgström. "Anm.," 200; Frey 411. *Mictodactylus* var. *b*., Zell. "Isis," (1841), 837 (in part). *Plagiodactylus*, Sta. "Cat. App.," 28; Zell. "Linn. Ent. Zeit.," VI., 368; H.-S. 22; V., p. 377; Frey 412; Mill. "Ic.," I., 209, Book 4, Pl. 3, 8-12. *Aridus* (in error), Gregson, "E.M.M.," VII., p.88; South (in error), "Ent.," XIV., p. 77.

This species is only known as *serotinus* on the Continent, owing to Dr. Wocke and Pastor Wallengren, both having overlooked Haworth's description. With regard to this, Mr. C. G. Barrett writes:—"I am strongly of opinion that Haworth's name should be restored." It appears to have escaped Mr. Barrett's notice that Haworth has simply utilised Viller's description for what he calls "The grey wood-plume," and that Villers therefore was the actual nomenclator of the species. Mr. South, in the "Entomologist," Vol. XIV., p. 77, writes that "Imagines of both species (*aridus* and *lætus*) have occurred in this country." This, I suppose, was based on Mr. Gregson's record, "Ent. Mo. Mag.," VII., p. 88, and if Mr. South intended to infer, as he probably did from his list, that *aridus*, Zell. had occurred in this country, he was almost certainly wrong.

IMAGO—In all its varieties, this species cannot be well mistaken for any other, although specimens of the following species might be, by chance, overlooked as that under consideration. The anterior wings are of an ashy-grey colour, somewhat pointed at the tip, each divided into two lobes, with a double black spot at the end of the fissure and a small black linear marking in the anterior lobe. The hind wings are divided into three plumules, and are of a strong grey colour. Haworth's diagnosis is;—"*Alucita* alis anticis cinereis, punctis tribus nigris lineaque fusca longitudinali in limbo." "Alæ superiores bifidæ, incisura lin. 1½ longa, segmentis parallelis, supra pari uno punctorum nigrorum, intervallo lin. 1⅔ ab alæ apice distantium punctoque alio minore eodem intervallo, a basi aliisque punctis remoto. Alæ posticæ bifidæ (trifidæ?), fusco-ferrugineæ, nitidæ. Abdomen alis posticis concolor, lineis argenteis dorsalibus binis, lateralibus denuo binis, sed ad medium usque non productis, infra iterum binis; præter has est lineola nigra lateralis ad basin abdominis. *Vill., Ent.*, 2.535, 1092." ("Lepidoptera Britannica," p. 476). Stainton's diagnosis of *bipunctydactyla* is:—"10‴ F.-w. greyish-brown, paler towards the inner margin, with a black spot before the fissure; costal fringes of the anterior lobe entirely dark." Of var. *plagiodactyla*, he writes:—"9‴ F.-w. greyish-brown, the inner margin paler; the costa beyond the middle clouded with dark brown; before the fissure is a blackish blotch and in the anterior lobe is a short black streak." ("Manual," II., p. 442). Mr. Gregson writes of the imago (under the name of *plagiodactylus*, which he afterwards altered to *scabiodactylus*:—"Head and face fuscous; fore wings irrorated with dark scales on the anterior portion; inner margin ochreous, irrorated; a small dark spot on the third part of the wing; then a large wedge-shaped one at the head of the cleft, and a dark streak in the first lobe, the first cleft-edged with a whitish streak; under wings, together with their cilia, brownish; thorax dark; first segment of abdomen triangular, ochreous, edged with white; upper surface of the legs dark, spurs and feet light. I am not aware that this insect or its larva have ever been previously described; the specimens from which the above descriptions were made were found in the larva state at Llanferris, when I was there in April last, in company with Mr. Greening; the bred specimens were of average darkness, but bred specimens vary much in colour." ("Entom.," Vol. III., p. 186).

Variation—The difficulty of the synonomy of this species is to a great extent connected with the variation in this species. There is a fair amount of variation in the size of the specimens, and still greater variation in their colour. The prevalent colour is grey, but the inner marginal area is frequently tinged with brown, and sometimes the whole wing is similarly coloured, the insect frequently being rather brown than grey. This was especially marked in some specimens I saw in Mr. Sydney Webb's collection. The local forms which thus vary have been differently named, and Mr. C. G. Barrett points out that the British specimens of *avidus*, *plagiodactylus*, Sta. and *scabiodactylus*, Gregson are only local forms of this species. He writes:—"I have been investigating *plagiodactylus* from time to time for a dozen years, and am not fully satisfied yet. The distinctive characters, as given by Mr. Stainton, are,—the dark clouding on the costa, and the short black streak on the anterior lobe of the fore-wing. The insect is common in chalky places among *Scabiosa columbaria*, sometimes swarming about disused chalk pits,—from nine to ten lines in expanse of wings, usually with the markings more or less distinct, and sometimes very pronounced, but also frequently varying in the direction of faintness of those typical markings, until, in some specimens, they entirely disappear. On the other hand, we find scattered all over the country, almost wherever *Scabiosa succisa* grows, the ordinary *M. bipunctidactylus*, varying from eight to ten lines, the smallest generally occurring in the drier localities, where the scabious is stunted. These are usually without the clouded costa and black streak on the anterior lobe, but in some specimens both characters appear indistinctly, and, in some few, they are to be seen pretty distinctly; in fact, the two forms distinctly overlap. I remember, that at Ranworth Fen, a patch of very luxuriant *Scabiosa succisa* produced specimens that leaned altogether to the *plagiodactylus* form; while at Brandon, among *Scabiosa columbaria* and *arvensis*, the two forms were so mingled that no one could separate them. Now, in all these forms, the black spot before the fissure is constantly present. It does not seem in the least degree to share in the inconstancy of the other dark margins, and the white border of the fissure is also usually visible, From the Lake District comes a form in which these reliable characters are much as usual, but the variable characters—the clouding and black streak - are so much exaggerated that the insect has been described as a distinct species. It has, however, been reared from precisely the same larvæ to those of *plagiodactylus*, feeding in a precisely similar way. I have many times spent hours, with good magnifiers, over long series of these various forms, and have not been able to find any reliable point of distinction between them, and the only logical conclusion I can come to, is, that they constitute but one species—*bipunctidactyla*, of Haworth. As already stated, I believe the few British specimens that have been reared under the name of *aridus*, *Z.*, to be pale ochreous varieties of this species. I will not venture an opinion upon Zeller's *aridus*, of which I have but a single type, and which is recorded from Southern Europe, Northern and Western Russia, Armenia and Palestine." ("Ent. Mo. Mag.," Vol. XVIII., p. 179).

Some three years after Mr. Barrett had come to this satisfactory conclusion (April, 1885), Mr. South writes:—"I am inclined to think that *Mimæseoptilus bipunctidactyla* and *plagiodactylus* are only forms of one species. I have a long series of both varieties from various parts of England. Looking at the series of both as a whole, variation as regards intensity of wing-marking and size of individuals is exhibited; but the range of variation, as regards markings and colour, is not so

THE DIPTERA OF DORSETSHIRE.

BY C. W. DALE, F.E.S.

(Continued from Vol. I., p. 84).

SUB-ORDER—APHANIPTERA.

FAMILY—PULICIDÆ.

17. *Ceratophyllus assimilis*, Tach. On shrew mice and voles. Introduced as a British species under the name of *Typhlopsylla assimilis*

in "Entomologist's Monthly Magazine," Vol. XXVII., p. 170.

NEMOCERA.

Family—Mycetophidæ.

Since my former article on this family was published I have discovered that sp. 16, *G. ornata*, figured in "Stephen's Illustrations," is identical with sp. 4, *M. lutescens*, Zett. Of *Leptomorphus Walkeri* I took another example on September 1st, 1891. Sp. 15, *G. Winthemsii*, Lehm., was taken at Glanvilles Wootton by my father, in October, 1829, and by myself on May 29th, 1880. I can add the following species to the list:—

6a. *Dynastoma fuscicornis*, Meig. Common in windows and amongst ivy, ferns, and other plants, thatch, &c.

29a. *Platyura laticornis*, Meig. A single specimen was taken by my father at Glanvilles Wootton, in June, 1858.

30a. *P. discoloraria*, Meig. Taken by myself at Glanvilles Wootton, in June, 1891.

Family—Cecidomyidæ.

Of this family my knowledge is very small, and I can therefore give but a very imperfect list. The species are very numerous, inhabiting many different plants, some depositing their eggs in the sprigs, others in the leaves, others in the flowers, causing thereby either the production of galls, similar to those produced by the *Cynifidæ*, in the distortion of the flowers. One of the species produces those well-known galls on the willows, which Swammerdam described under the name of the Rose-willow. Others are extremely injurious to the wheat crops, both in England, Europe, and North America. One species, *C. tritici*, Kirby, deposits its eggs in the centre of the corolla, where the larvæ, when hatched, perhaps by eating the pollen, prevent the impregnation of the plant. It is, however, subject to the attacks of a parasite—*Platygaster tipulæ*, Kirby. Another species, still more destructive, is known under the name of the Hessian fly—*C. destructive*, Say., and has spread terror amongst the farmers of the eastern counties of England as well as in America. For particulars consult the Agricultural Report of Miss Ormerod. The following are the Dorsetshire species:—

53. *Catocha latipes*, Hal. Generally distributed.

54. *Campylomyza atra*, Meig. Generally distributed.

55. *C. aceris*, Meig. Scarce. Glanvilles Wootton.

56. *C. bicolor*, Wied. Scarce. Glanvilles Wootton.

57. *Lestremia leucophara*, Meig. Frequents fir trees in the winter time.

58. *Lasioptera fuliginosa*, Steph. Generally distributed.

59. *L. picta*, Meig. Scarce. Taken by my father near Bournemouth, on June 18th, 1840.

60. *Cecidomyia salicina*, De Geer. Common. Forms the well-known galls on the willows.

61. *Diplosis variegata*, Macq.—*pictipennis*, Meig. Is figured by Van der Wulp in his "Diptera Neerlandica." Rare. Taken by my father at Glanvilles Wootton on February 10th, 1832, May 29th, 1833, and also at Blandford.

62. *D. verna*, Cuet. Generally distributed.

63. *D. tritici*, Kirby. Wheat Midge. Generally distributed.

64. *D. flava*, Meig. Generally distributed.

65. *D. pini*, De Geer. Rare. Taken at Glanvilles Wootton by my father on July 21st, 1866, and August 22nd, 1873.

66. *Hormonyia cucullata*, Meig. Generally distributed.

FAMILY—PSYCHODIDÆ.

This is a curious little family of broad-winged flies, covered with down, and somewhat resembling little moths. The larvæ of *P. phalaenoides* and *sexpunctata* inhabit dry cow dung; they are long, subfusiform, and depressed, with a slender, straight, cylindrical tail.

67. *Pyschoda phalaenoides*, Linn. Common everywhere.

68. *P. sexpunctata*, Cuet. Generally distributed.

69. *P. humeralis*, Meig. Generally distributed.

70. *P. bullata*, Hal. Generally distributed.

71. *Pericoma ocellaris*, Meig. Generally distributed.

72. *P. trifasciata*, Meig. Generally distributed.

73. *P. canescens*, Meig. Generally distributed.

74. *P. palustris*, Meig. Generally distributed.

75. *P. nubila*, Meig. Generally distributed.

76. *P. fusca*, Macy. Generally distributed.

77. *Ulomgia hirta*, Linn. Generally distributed.

(To be continued).

COLLECTING AT LUSS, LOCH LOMOND, SEPTEMBER, 1891.—When an Entomologist visits a new district, it is with feelings of eagerness and inquisitiveness to know what particular insects are to be obtained in the locality. He may be fortunate enough in obtaining many rare and local species which he had not harboured in his anticipations; he may also be doomed to disappointment; but what I have to express in the matter is, that I did not feel at all elated at my success last September, when I visited Luss for the first time. The lateness of the season, and the showery and boisterous weather, may account for the lack in number of the insects.

The village of Luss stands on a headland that projects into the lake, it is well situated and romantically beautiful, and many exquisite views of the loch and its numerous islands can be obtained in the vicinity. When my brother and I arrived there, on the 11th of September, the weather seemed settled and promising well, but two or three days later it unfortunately altered, and remained in a showery and changeable condition during our stay of a fortnight's duration.

The butterflies on the wing were few in number. A solitary specimen of *Pieris rapæ* was one day observed meandering across a field. Several *Vanessa urticæ* were also noticed, and a single type of *Polyommatus phlæas* was captured in a corn field. *Orgyia antiqua* was sometimes seen when the sun mysteriously condescended to appear. *Nonagria fulva* was very common in two or three places. *Plusia gamma* could be taken during the day, and again in the evening as it hovered over the flowers in the gardens. *Orthosia macilenta* was perhaps the most abundant, though if we had not accidentally alighted on it very few would have been taken. We discovered it on the day of our arrival sitting on the grass at the foot of a wall, where it was very difficult to distinguish it from the numerous yellow and brown leaves which had fallen from the trees; this is certainly one of the clearest, yet most cunningly disguised examples of natural selection which has come under my observation. A few *Anchocelis rufina* and *A. pistacina* were also procured in the same manner. Single specimens of *Hadena protea* and *Agriopis aprilina* were taken from the tree trunks. *Polia chi* occurred on the stone walls and a single *Celæna haworthii* was taken while resting on a flower. The Noctuæ in the evening, though few in number, were fairly representative in species; several *Noctua glareosa*, *Hydræcia nictitans*, *H. micacea*, *Triphæna orbona*, *T. pronuba*, *Xanthia cerago*, *X. silago*, and *Miselia oxyacanthæ* were caught. Of the Geometræ, *Cidaria immanata*, *C. russata*, *C. testata*, *Ypsipetes elutata*, *Thera variata*, *Melanippe fluctuata*, and *Larentia didymata* were common, and a single *Chesias spartiata* was captured.

The Micros were well represented; *Teras caudana*, *T. contaminana*, *Pædisea solandrinana*, *P. sordidana*, *Grapholitha nigromaculana*, *Tortrix xylosteana*, *Peronea tristana*, and *P. sponsana* were common. *Depressaria arenella*, and *D. applana* were taken at the ragwort, and single specimens of *Harpipteryx xylostella*, *Gracilaria elongella* and *Amblyptilia acanthodactylus* were captured.

The Saturday preparatory to my coming home was very stormy, in fact, the wind had almost risen to a gale, but we soon found out that such a day has some advantages to the Entomologist, and which I think is worthy of being mentioned. When walking up the glen on Sunday forenoon we discovered that a great number of larva had been shaken from the trees and were travelling along the road and up the tree trunks to regain their natural station. We obtained in this manner, about a dozen *Notodonta camelina*, two *N. dromedarius*, one *Odontopera bidentata*, and many others which I am unable to name.—R. ADIE DALGLISH, Pollokshields, Glasgow.

THE HETEROCERA OF THE ISLE OF MAN.

BY HENRY SHORTRIDGE CLARKE, F.E.S., ADVOCATE.

(Continued from page 27.)

Triphæna janthina.—Took 2 at Bride Rectory some years ago.

Triphæna fimbria.—Larvæ freely in old lanes in April.

Triphæna interjecta.—Occurs near Ramsey; Mr. Jäger took it there in 1890. Larvæ in damp lanes in April.

Triphæna orbona.—Very common and widely distributed.

Triphæna pronuba.—Very common and widely distributed.

Noctua glareosa.—Occurs at Ramsey. Larvæ all along the coast in April, imago at light in August.

Noctua augur.—Has been taken freely at Onchan by Mr. Gregson.

Noctua plecta.—Common and widely distributed.

Noctua c-nigrum.—Have taken several at sugar in Lezayre. Abundant in old gardens on Gooseberry bushes, when the bushes are covered with honeydew.

Noctua triangulum.—Local and rare. Mr. Gregson records its capture at Onchan. It occurs also in old lanes.

Noctua festiva.—Occurs at Lezayre, took several there in 1890.

Noctua v. conflua.—This variety of the foregoing insect has been taken at Onchan.

Noctua umbrosa.—Plentiful on the ragwort flowers growing on the coast in August.

Noctua baja.—Abundant in July at sugar in old lanes.

Noctua xanthographa.—Common and widely distributed.

Tæniocampa gothica.—Occurs at Onchan and the Nunnery, &c.

Tæniocampa instabilis.—Thirty specimens were bred by Mr. Gregson from larvæ collected in Onchan Nursery grounds.

Orthosia lota.—Occurs at North of Island, but is not a common insect. Larvæ in twisted leaves of sallow in May and June.

Anchocelis lunosa.—Widely distributed. Occurs some seasons, near Ramsey, plentifully.

Anchocelia pistacina.—Plentifully at light in September. Vars. *serina* and *canaria* have also been taken.—C.S.G.

Anchocelis litura.—Plantations near Port Soderick.

Scopelosoma satellitia.—Local. Larvæ have been found at Port Soderick.

Xanthia cerago.—Plentiful at Lezayre.

v. flavescens.—Mr. Gregson records the capture of this variety, and he has bred the perfect insect from larvæ, from sallows, near the Quarter Bridge.

Xanthia silago.—Occurs at Lezayre and Bride.

Xanthia ferruginea.—Widely distributed.

Cirrhœdia xerampelina.—Local. Occurs at the Nunnery, Pulrose, and Ramsey. Took several, in company with Mr. Jäger at the Nunnery, in August.

v. unicolor.—Mr. Gregson records this variety.

Tethea retusa.—Local and rare. Mr. Gregson records its capture. He has bred the insect from larvæ taken by him near the Quarter Bridge, and says the larvæ tie about 3 of the terminal leaves into a triangular home and reside inside.

Dianthæcia carpophaga v. capsophila.—Local. Occurs at Onchan, Growdle, and near Castletown. Larvæ plentiful in the pods of *Silene maritima.*

Dianthæcia capsincola.—Onchan and Growdle, wherever the red or white Campion grows, larva in the seed pods.

Dianthæcia cæsia.—Local. Occurs some years more plentifully than others. Onchan and cliffs beyond Douglas Head Lighthouse. Some lovely specimens were taken by me in June, 1890. Is strictly a coast insect, first discovered by me in June, 1890.

Dianthæcia cucubali.—Mr. Gregson states that the larvæ are plentiful *when young* in the seed heads of *Lychnis dioica* and *Silene*, afterward, they leave the heads and may then be found amongst the undergrowth in July.

Dianthæcia conspersa.—Mr. Gregson states the above remarks apply to both these species.

Hecatera serena.—Local and rare. Occurs occasionally near Onchan.

Polia chi.—Local. Mr. Gregson records its capture; he has taken the larvæ on the Cliffs.

Polia nigrocincta and **xanthomista.**—Local. Occur at Onchan. See "Newman," p. 395. Messrs. C. E. and J. H. Stott took several larva in June, 1890.

Dasypolia templi.—Local. The late Edwin Birchall records its capture. Mr. Gregson has bred freely from larvæ and pupæ taken from roots of *Sphondylium* near Ballysella, July, August.

Epunda lutulenta.—Larva on grassy banks near the sea.

Epunda nigra.—Appears widely distributed. Onchan. Ramsey, Lezayre, and elsewhere.

Epunda viminalis.—Local. The late Mr. Birchall records its capture.

Epunda lichenea.—Larva plentiful, in April, on Douglas Head.

Phlogophora meticulosa.—Very common and widely distributed. Occurred in great numbers near Douglas during September, 1890.

Euplexia lucipara.—Common and widely distributed.

Hadena adusta.—Common.

Hadena glauca.—Local. Occurs occasionally near Onchan. Prefers moor lands.

Hadena dentina.—Appears plentifully some years at Onchan.

Hadena oleracea.—Common and widely distributed throughout the island.

Hadena pisi.—Appears widely distributed on waste places.

v. splendens.—Occurs freely. Rich reddish-purple and yellow.

Hadena thalassina.—Occurs at Onchan. Common. Beautiful varieties at sugar.

Xylocampa lithoriza.—Occurs at Lezayre, &c., &c.

Cucullia chamomillæ.—Occurs at Onchan, &c., &c.

Cucullia umbratica.—Widely distributed. Bride, Onchan, and elsewhere.

Anarta myrtilli.—Mr. Gregson records its capture on heather.

Micra parva.—Local. Mr. Gregson records the capture of one specimen taken by him near Onchan.

Habrostola urticæ.—Occasionally at Onchan.

Habrostola triplasia.—Occasionally at Onchan. Larva freely on nettles in June.

Plusia chrysitis.—Common and widely distributed. Bride, Andreas, Ramsey, Onchan, and elsewhere.

Plusia iota.—Tromonde, and Onchan Nursery Gardens.

Plusia v-aureum.—Some years plentiful near Tromonde, also at Andreas and Lezayre.

Plusia gamma.—Common and widely distributed.

Gonoptera libatrix.—Port Soderick. Often taken in outhouses in Douglas and Onchan. I took one on sugar at Glenduff, Lezayre, in June, 1891.

Amphipyra tragopogonis.—Common. Occurs plentifully in the Nunnery Grounds at sugar, in Autumn.

Mania typica.—Common and widely distributed. Occurred in great numbers near Douglas, in 1889.

Mania maura.—Common and widely distributed at the Nunnery Grounds and Lezayre. This insect comes freely to sugar.

Stilbia anomala.—Larvæ in April abundant on grassy banks on the coast. Perfect insect on the wing, on the coast.—C.S.G. Occurs at Ramsey. Mr. Jäger took it there in 1890.

Euclidia mi.—Plentiful on low coast lands. Occasionally at Onchan.
Euclidia glyphica.—Plentiful on Bank's Howe.

Mollusca.

Notes on Varieties. The observations on variation recorded by Mr. Gain, on p. 35 are of the greatest interest. I do not agree with all his opinions on this subject, but the careful breeding of the several varieties is just the thing we want, and will go further towards solving difficult problems than any amount of discussion based on cabinet specimens. If it can be proved that the *different* variations of *Helix nemoralis* and *hortensis*, though living in the same hedge, rarely mate and produce fertile offspring; and that individuals of the *same* variation give rise to others like themselves, it is a matter of the highest importance from an evolutionist's point of view. Of course, much has been written on this particular question, notably by Messrs. Gulick and Romanes, and I need not here go into the details of what is known as "Physiological Selection," but I think the warmest advocates of that theory would be the first to admit the desirability of fresh and numerous experiments, such as those of Mr. Gain, to test the point. Early in 1890 I received a circular from Prof. Romanes, urging botanists to make observations testing this theory, and as it explains what is wanted briefly and lucidly, and applies equally well to animals, I will quote portions of it:—"Several years ago I published "An Additional Suggestion on the Origin of Species," which, briefly stated, consists in the hypothesis that in many cases, species owe their origin to a sexual variation, such that while fertility continues unimpaired within the limits of the physiologically affected group, some degree of infertility supervenes between members of this group and the unaffected portion of the species. . . . . Thus, the occurrence of some degree of sterility between allied species, which is so frequently observable, may be explained by the supposition that the sexual change was the prior change. . . . ." "In order to test this theory, constant varieties of plants growing on common areas (or areas not geographically separated) ought to be tested as to the comparative fertility of A x A, B x B, A x B, B x A, where A is one variety and B the other. I believe you would find that in most cases where there is a marked difference of fertility even as between such first crosses,—A x A and B x B being more fertile than A x B or B x A, while in many cases I believe you would find A x B and B x A absolutely sterile. But if there should be no difference observable in the case of first crosses, the experiment ought to be continued with the progeny of each, in order to ascertain whether the hybrids [*i.e.*, mongrels] are as fertile as the pure-bred varieties. . . . In his elaborate works upon this subject, M. Jordan describes and figures an immense number of constant varieties within the limits of this, that, and the other species—varieties which differ from one another in such minute points of morphological character that they can only be detected by careful observarion, yet, when detected, the varieties are found by experiment to be mutually sterile. " Now, in this country, no one, excepting myself, appears to have taken up this very interesting line of research . . . ." In testing this point in *Helix nemoralis*, it would be desirable to ascertain whether the difficulty of mating between different varieties is due to a physiological barrier, as above indicated; or to a psychical tendency, resulting in the association of "like to like." In either case the result would be the same, but there is a radical difference between the two things. I do not quite understand from Mr. Gain's notes, whether he failed to get diverse varieties to unite, or whether the union between them failed to produce young. In the latter case the barrier would be certainly physiological; in the former it might be either, or both. Scattered observations on the breeding of *Helices* are fairly numerous, and I need not attempt to enumerate them; but these points can only be decided satisfactorily by prolonged and careful experiments with numerous individuals. *Helix hortensis* has long been known to occur on islands off the New England coast, where the specimens in each locality are (unless with rare exceptions) alike in colour and banding. Dr. Amos Binney, in the second volume of "*The Terrestrial Air-Breathing Mollusks of the United States*," p. 114, remarks "When I first visited Salt Island, where this species abounds, ten years ago, it was impossible to find a single specimen with either lines or bands. One uniform colour prevailed throughout. At the present time, the banded varieties are said not to be uncommon." To this, Gould adds, "They have recently been discovered by Dr. Samuel Cabot, in great numbers, on House Island, another of the little islets in the vicinity of Cape Ann, where all of them are of the banded variety. On the outer Gooseberry, another neighbouring islèt, he found still another variety."—This was published in 1851. Recently, Mr. J. H. Thomson sent the present writer a box-full of *H. hortensis* from the Island of Martha's Vineyard, U.S.A., and these were all plain bandless yellow. The explanation of these interesting cases is, I take it, that only one variety was originally introduced in each island, and this has kept pure by isolation. The fact that colonies on the mainland are not so uniform in colour is well-known; thus, I received six varieties from one locality in Massachusetts. *Helix nemoralis*, on being introduced into Virginia, has shown the most extraordinary amount of variation, producing mutations not noticed in Europe. This may be set down to the disturbing influence of new environment, but it remains to be seen whether after many years the variation will be kept up, or a new race will be formed, or whether, as is perhaps most likely, the species will tend to revert to the normal. This suggests experiments as to the inheritance of acquired characters, which may well be undertaken with snails. In the case of *Paludina*, recorded by Mr. Gain, it appears that the large size, which may have been due to favourable environment, was not inherited.—T. D. A. COCKERELL, F.Z.S., F.E.S., Institute of Jamaica, Kingston, Jamaica, *February 21st, 1892.*

THE GENUS RISSOA.—*Rissoa* is one of the smallest genera as regards size, and one of the largest, if we reckon the number of species, that inhabit British waters. The former consideration makes these pretty little mites a real stumbling block to the Conchologist at starting, and he is apt to give them up as a bad job when he finds that we boast of 25 species. It is, however, quite possible to quickly acquire a certain facility in "spotting" several species, and by the process of elimination one gradually is able to work out almost all the commoner *Rissoas*, temporarily disregarding at least half-a-dozen, whose rarity takes them out of the ken of the ordinary collector. The variations in the species themselves are not numerous, being chiefly confined to the protean *R. parva*, one of the commonest of small shells, which is frequently referred to me for determination under various queried names and with every variation of sculpture, from the smooth shell (var. *interrupta*, Adams) to those with the strongest ribs; the colour too of *R. parva* is variable, and a dark chocolate shell occasionally occurs which Canon Norman calls var. *nigra*. Created by *Fréminville in 1813, and named after the old Nice Naturalist *Risso*, the origin of the genus can be traced back at least into Eocene times in the Paris Basin, and many recent species actually occur also in the Pliocene and Pleistocene of Italy, Sicily, England, Rhodes, etc. The range of the genus is universal, though principally in temperate waters, and the habitat extends from between tidemarks to great depths—*e.g. R. abyssicola*, Fbs. came up, off Malta, from 350 fathoms, this being, as its name implies, a deep-water species, and no doubt the "Challenger" Reports furnish much greater depths even than this. It is, however, a littoral genus in the majority of cases, and Dr. Jeffreys divides our list into 15 littoral and 10 coralline and deep-water species. Woodward gives the total number of species in the genus as about 70, but Dr. Kobelt catalogues 110 European species only in his "Pzodromus" 1888, and Canon Norman in the same year published a carefully revised catalogue of his shells, listing no less than 100 palæarctic *Rissoas* in his own collection. Woodward says that there are about 100 fossil species. No doubt careful collecting will add enormously to the total,—last year, *e.g.*, *St. Helena contributed a substantial item of new species, I forget exactly how many, but over a dozen, and Australian waters are not unprolific according to Mr. Petterd.† As elsewhere, the "splitters" have been busy, and not altogether unsuccessfully so, in this genus of dwarfs. As we are concerned with British *Rissoas* only, we will take singly the divisions or sub-genera which have British representatives, in no particular order, but according to Canon Norman's classification of the species, though, by the bye, he gives all these sections generic rank. It should be premised that our small friends were originally classed by Gray with the periwinkle family, but are now justly elevated to the rank of a separate one called *Rissoidæ*.

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* Journal des Mines, 1813. Bull. de la Soc. Philomatique de Paris, 1814 (Desmarest).

SUB-GENUS ONOBA, Adams.—This contains 3 species of which two, *R. vitrea*, Mont. and *R. proxima*, Alder are rare deep-water species and may be passed over, but the third, named *R. striata*, Adams, is of commonest occurrence both alive and dead; for live specimens search the roots of small seaweeds, especially the *Corallina officinalis*, above low-water mark. A taste of mud always seems to suit it, and frequently the undersides of stones resting rather firmly on a muddy sand will produce a good harvest. For distinguishing marks we have a good guide, both in colour and form; the former is usually quite a dull white, with two broad indistinct red bands on the last whorl only. These always end *before* reaching the edge of the mouth. Dead shells from shell sand will show these bands up more sharply. The shell is 3 or 4 millimetres long (about $\frac{1}{7}$ inch) and cylindrical, with a blunt spire—there is very little difference all the way up. Some curious ribs, fairly obvious, run from the suture (or joining of the whorls) downwards, halfway across each whorl. Note then the habitat first of all, and examine your weed-washings for a small oblong white shell, blunt and hardly tapering, perhaps recalling in miniature some of the proportions of *Cochlicopa lubrica*. Curiously twisted fellows are not uncommon especially in dredgings, and have been dubbed *monstr. distortum*. There is the usual variation of a smooth (*i.e.*, ribless) form, mostly of northern occurrence, called var. *arctica*, Lovén, probably identical with the North American *R. aculeus*, Gld. Just a word on the best way of working the small seaweeds in quest of minute shells. It is hopeless to do so at all thoroughly on the spot, and they should be carefully scraped off close, with the sand or mud adhering to their roots, and transferred to tins or bags—the growths in small rock-pools near low water are most prolific. Carefully pulled to pieces and washed in *fresh water*, the shells, etc., will fall to the bottom, and this sediment can be dried, separated, and thinly sprinkled on a black tray for examination. Species sure to occur are the red bivalve *Lasæa*, the flat minute brown *Skenea*, just like a minute *Planorbis*, and the fry of many species which become familiar by degrees.—B. Tomlin, Llandaff. *(To be continued).*

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* Proc. Zool. Soc., April, 1891. † Q. Jour. Conch., IV., p. 137.

Notes on Varieties.—Recently I have looked through quite a large number of volumes of Natural History Journals, looking up stray facts for future reference. Among other things I find several papers and notes bearing on the above subject. First, an article, written in 1885 by Mr. T. D. A. Cockerell, from which I extract the following: "Varieties are often local, abundant at one place, and not to be seen in the surrounding country; and, strangely enough, this localness seems also to a certain extent peculiar to what are generally called mere monstrosities. I mean the sinistral, scalariform, and decollated forms. Miss Hele, in "Science Gossip," records the occurrence of three sinistral *Helix aspersa*, and two *H. hortensis*, all in the same lane, and I cannot think that this was purely accidental; there must have been some reason for these shells becoming reversed, and what that reason may be, I cannot imagine. On Chislehurst common I took a specimen of the monst. *scalariforme* of *Limnæa stagnalis*, having the whorls almost disunited, and the suture between the fourth and body whorls forming an acute angle. This specimen was found in a very small pond, where the typical form of *L. stagnalis* does not occur, but the pond is crowded with a variety which is smaller than the type, and has a deeper suture. In the same pond my brother took another scalariform *L. stagnalis*, and he also found a third specimen in a pond not far off." This seems to strengthen the conclusion to which my own observations and experiments have conducted me, that varieties, as a rule, breed true, and the same may be said, to a less extent, of monstrosities, they are, at least, apt to recur. As bearing on this point I relate the following circumstances:—Several years ago I was acquainted with a female cat which had a supplementary toe on each fore-paw; although there was, to the best of my belief, no other cat in the neighbourhood having a similar peculiarity, all the kittens of this cat, and I remember three litters, had more than the ordinary number of toes. The supplementary digits usually occurred on the fore-paws, but in one instance three had this peculiarity, and in another all four. It is reasonable to suppose that by selective breeding a race of such cats might have been produced. With the recollection of these facts before me I see no difficulty in accounting for a number of reversed shells of any one species being found in a locality. Mr. Swanton, of Ballyshannon, writes in 1889, relating the finding of about two dozen reversed examples of *H. nemoralis* annually by the poor of that district. The original ancestor of these reversed shells was probably produced in a manner analogous to that of the variations in the vegetable kingdom, which gardeners term "sports," these occur more frequently among highly cultivated species than among wild plants, monstrosities are also more commonly observed in domesticated animals than in the wild. In fact, those circumstances which are highly favourable to the individual seem also to favour abnormal growth. This may serve in some degree to explain the occurrence of reversed examples of two species in the same neighbourhood. When one such *Helix* has been produced, and bred, I should expect to find among the decendants others of a similar character. If conchologists who are so fortunate as to find reversed and scalariform examples would note such facts as luxuriance of food plants, humidity, sheltered position, &c., some light might be thrown on the circumstances favouring the production of these forms. Mr. Cockerell also mentions certain examples of *H. aspersa*, *H. nemoralis*, and *H. hortensis*, all collected on the same bank, and having peculiarities in common; a straw-yellow tinge of the ground-colour with red-brown bandings or markings. No description of the locality is given further than that they were sent from Torquay. In another place, speaking of banding, he says "I am somewhat inclined to suppose that dryness tends to produce forms with the bands much split up and yet distinct. I find this tendency in American examples of *H. hortensis*, and it occurs in excess in *H. pisana* which always frequents hot and dry localities." Mr. Tomlin, in 1888, recorded the occurrence of a single example of *H. caperata* having translucent bands, in company with *H. virgata* of like banding. These observations tend to show that there are certain local circumstances which tend to produce variation in certain directions, and, I think, a careful record of the conditions under which abnormal forms and rare varieties have been found would throw much light on the causes of these variations. With regard to the descendants of Albinos, Mr. J. W. Williams, writing in 1886, says "In cases of albino (*Helix grisea*, Linn.), Dr. Martinati observed that their produce were normal." It would be interesting to know the extent of his experiments with these mollusks, as his results are very different to those arrived at by my correspondent, Dr. Haeusler (I find I misspelt his name in a former paper), with *Pupa dolium*, and to my own observations with regard to *H. hispida*. On leaving England, Dr. Haeusler sent me his remaining living examples of *P. dolium*, and albinos certainly predominated among them, the others being of a lighter colour than the type.—W. A. Gain.

General Notes.

A Disclaimer.—We venture to trouble you with a few observations respecting Mr. R. South's remarks in the January and March parts of *The British Naturalist*, which appear to place an erroneous construction on "the action of the City of London Entomological and Natural History Society in the matter of my [Mr. South's] communication with reference to the *Luperina testacea*, var. *nickerlii*, question." It is quite true that Mr. South sent us a letter on the subject, but this is not the whole story. The said letter in due course was laid before the Council of the Society. As Mr. South was not a member, the Secretaries (Messrs. Lewcock and Battley) were instructed to offer that gentleman an evening to discuss the subject at the Society's rooms. The invitation was also to include any friends Mr. South might wish to accompany him. These instructions were duly carried out, and the selected date was advertised in the usual position in the March number of the *Entomologist*, of which Mr. South is editor. But soon after publication of the latter magazine, Mr. South wrote us again and declined to attend the meeting. Under these circumstances the Council could proceed no further in the matter, and left the editor of the *Entomologist* and the editor of the *Entomologist's Record* to settle grievances which the Council believed to be mainly personal. Therefore, on behalf of the City of London Society, we entirely repudiate the inference deduced from the version given by Mr. South; and, in conclusion, must express our regret that this subject has been raked up again after an interval of at least twelve months.—(Signed), G. A. Lewcock, A. U. Battley, J. A. Clark.

Noctua Festiva and Variety Conflua.—With regard to the rather animated discussion now on the "tapis" *re Noctua festiva* and the form known as var. *conflua*, from specimens obtained in the North of England and from Scotland, also to Mr. Tutt's attempt to establish var. *conflua* obtained from the Shetland Islands as a distinct species, having followed Messrs. Tutt's, South's, and Robson's able articles on the subject with deep interest and with a view if possible to throw a little more light on this rather dark question, I invited the entomological members of our Naturalists' Society, Messrs. R. Dutton, S. Walker, J. Hawkins, G. Jackson, and E. G. Potter, all first class collectors and men of considerable experience in matters entomological, to bring all the best forms of *festiva*, and the so-called var. *conflua* from the North of England and from Scotland, together with the true var. *conflua* from the Shetland Islands which they possessed, and to these I added my own specimens, and we also had the advantage of consulting the long series of *festiva* and so-called var. *conflua* from Scotland in the collection of the late Mr. T. Allis, this collection being placed in the Council Chamber of the Museum where our meetings are held. The result was that a great number of very choice and picked forms of *festiva* and so-called var. *conflua* were to be seen from many and widely different localities, embracing most, if not all, of the varieties named in Mr. Tutt's second volume of varieties of *Noctuæ.* Still from amongst all the different forms of *festiva* we could not find one which bore any great resemblance to the var. *conflua* from Shetland, or indeed to the forms of *festiva* from this locality which I possess. Now, with regard to the small form *festiva*, called var. *conflua*, from the North of England and from Scotland, I quite agree with Mr. Tutt that these so-called varieties are nothing but *festiva.* The series in Mr. Allis's collection erroneously named var. *conflua* are totally distinct from any form of var. *conflua* from the Shetland Islands which I have seen. But, with regard to the var. *conflua* from the Shetland Islands which Mr. Tutt wishes to establish as a species under the name of *Noctua conflua*, from a very careful comparison of specimens of *festiva* and var. *conflua* from the Shetland Islands, I fail to find any specific difference between them, nor can I perceive that the wings of my var. *conflua* from Shetland are narrower than specimens of *festiva* which I possess from the same locality; indeed where Shetland forms of *festiva* and var. *conflua* are mixed up, I am sure it would be impossible for the most experienced entomologist to tell " t'other from which," and from what I have seen the forms of var. *conflua* from Shetland differ more from each other than do *festiva* from this locality, and until the larvæ can be shewn to differ from *festiva*, I shall certainly maintain that the so-called *Noctua conflua* from Shetland is nothing but a variety of *festiva.*—WILLIAM HEWETT, 12, Howard Street, York, *March 22nd, 1892.*

LUPERINA NICKERLII AND NOCTUA CONFLUA.—Mr. South has written two pages on *Luperina nickerlii*, but he appears to have got no further than the elementary notions he had at first. One thing is certain,—*nickerlii*, Fr., is nothing like *L. testacea*, var. *incerta*, and if Mr. South has three Bohemian specimens sent to him as *nickerlii* which are like the latter, they are certainly wrongly named. As a matter of fact, obscure species are generally named wrongly by Continental dealers, who get shillings for calling their common species rarities from a certain part of the gullible English public where the common species themselves are not worth pence. Mr. South refers to " my opinion." It has been formed by the use of common sense, on reading the various authors who described the species, and not on the statement of a dealer that the specimens are what they pretend to be, and who has to make a living out of their sale. I am afraid Mr. South's verbiage will not alter the fact that he did a foolish thing when he compared Mr. Baxter's *testacea* var. with what he called *L. nickerlii*, without proper reference to the authorities; and a still more foolish thing in sinking what *may be* a distinct Continental species on no evidence whatever. *Re N. conflua*, Mr. South regrets that I cannot discuss the matter of *conflua* "in a fair and impartial spirit," and yet in the course of a few lines he uses the following phrases:—"Criticised in his usual style," "indulged in a few misquotations," "seems to imply," "Dr. Mason may or may not have made the statement," "an adept in the art of garbling," "his Record," which appear to be remarkable signs of "a fair and impartial spirit." I am really very sorry for Mr. South, for he rarely writes anything that does not call down vials of wrath from some one or other. I know he did not mean to make an abortive attack on Dr. Mason through me, but unfortunately he did, and I can only regret that he got such a superficial knowledge of his subject before writing. I wrote all I had to write in the February part of *The British Naturalist*. There is nothing to add or subtract.—J. W. TUTT, *March 11th, 1892.*

HEPIALUS HECTUS.—I have frequently taken *H. hectus* with silver spots on the hind wings both near Glasgow and in Argyleshire. It occurs generally in the male, but I once met with a female in which there were faint traces of silver on the hind wings. The male with these spots is not very rare in Argyleshire, but it is not by any means common. It flies about the brackens at dusk, often very abundantly. They hover for a little under the fronds, then dart to another fern. Sometimes they are so sluggish that you may catch them with your hand, at other times they are lively enough.—J. MACKAY, Glasgow.

MICRO LARVÆ FOR THE MONTH.—At the wish of many friends I purpose continuing some short notes of the larvæ occurring each month, and although many of them have perhaps been mentioned in my former articles, my wish to assist all those who have just begun to study this interesting group, must be my excuse for again mentioning them, for I know by experience a timely hint now and then is a great encouragement, for in this, as in many other matters, the main difficulty lies in the beginning, once get over that, the path is easy, for most of the species are easily set, and collecting the larvæ may be pursued at any time, in dull weather or fine; a few tin boxes or small bags in the pocket is all that is required at most times, unless one is out for a whole day's collecting, when of course it is best to go well prepared. Owing to other pressing matters during the coming season, these notes will be just a rough idea of what may be done each month as it occurs; next year, if all is well, I hope to continue my former articles, with descriptions of the larvæ then mentioned, also a few directions as to collecting them in the imago state. The following larvæ may be taken this month (April):—*S. olivalis*, in a slight web under the leaves of ground ivy; *T. fosterana*, in curled-up ivy leaves; *S. roborana*, in shoots of rose; *E. fœneana* and *simpliciana*, in roots of *Artemesia vulgaris*; *C. strobilana*, in fir cones; *D. petiverana*, in roots of yarrow; *S. leplastriana*, in stems of wild cabbage; *X. zœgana*, in roots of scabious; and *E. udana*, in stems of water plantain (*Alisma plantago*). The long slender cases of *Psuedobombycella* may now be found on palings in shady places, and the short, round, mealy-looking cases of *X. melanella* on licheny trunks of trees in open parts of woods; the withered shoots of currant trees betrays the presence of the larva of *L. capitella*; and in the shoots of raspberry the larva *L. rubiella*. *P. porrectella* is common in some places on leaves and in the close shoots of garden rocket (*Hesperia matronalis*), and *Gel. vulgella* on hawthorn, between united leaves; *Gel. anthyllidella* in shoots of *Anthyllis vulneraria*; and in the shoots of honeysuckle the larva of *Gel. mouffetella*. The large bladdery-like mines of the larva of *Grac. tringipennella* are now to be seen in leaves of plantain, and in cones on leaves of *Hypericum*. The larva of *Grac. auroguttella*, *Col. pyrhulipennella*, and *juncicolella* can now be swept from heath; and the cases of *Col. solitariella* are easily found by the blotched appearance of *Stellaria holostea*; in the leaves of *Helianthemum valgare* the larva of *Lav. miscella* is now busily feeding, and in the leaves of reed at the sides of ponds and ditches the larva of *E. cerussella* are forming their long narrow mines, while those of *Bucc. aurimaculella* will be found mining the leaves of *Chrysanthemum leucanthemum* in long galleries which they will now soon quit to feed on the leaves externally. These and many others will reward the exertions of all those students who are really in earnest.—GEO. ELISHA, Shepherdess Walk, London.

BLACK VAR. OF PHIGALIA PILOSARIA.—On the afternoon of March 7th, I by accident noticed a dark looking insect, with wings thrown back showing the under sides to be of a uniform dark colour, drying itself on the trunk of a lime tree, as if larva had feed on lateral shoots projecting from the trunk and pupated at the foot, had emerged, and crawled to about two feet to dry itself. After allowing it an hour, I transferred it to killing bottle, and found the upper wings of soot black, showing distinctly the shining and deeper black veins and discoidal spots; the under wings of dark, smoky grey, with fringe of a lighter tint. Notwithstanding that the summer of 1891 was here damp and sunless to a great extent, autumn wet, and winter up to now rather a frosty one with plenty of snow, *P. pilosaria* has appeared earlier and more plentiful than I have seen for the last five years.—W. BROOKS, The Grange, Rotherham, March 14th.

HYBERNIA LEUCOPHEARIA.—On February 13th there being no direct road to Eastham Wood, I took a round-about way and searched the wood late in the afternoon. I was quite pleased to find four *leucophearia*, and they were all I got for my seven hours out and home. Since then we have had little but frost and snow.—C. S. Gregson, Liverpool, February 22nd.

Cross-breeding of Zygænæ.—I am not at all surprised to learn that *Filipendulæ*, *trifolii*, and *lonicerœ* have been crossed and bred. Their anal organs are very close, and I do not see why they should not have fertile pairings. But the form of the organs in *Meliloti* would effectually prevent crossing with it. In this species the organs are more like *Exulans* than any of these three.—F. N. Pierce, F.E.S. Liverpool.

Grey Phalarope.—Towards the end of October last year, after one of the many gales, a specimen of this bird was seen in the parish and, I am sorry to have to add, was shot by a man near whose cottage it had stayed for nearly ten days. It was so tame that when disturbed by anyone passing along the road it would only fly off to a short distance and very soon be back near the cottage. We hear that two or three other specimens have been shot in different parts of Herefordshire during the autumn, a most unusual occurrence, and it is, at least in this neighbourhood, quite a new record.—Norah Prescott Decie, Bockleton Court, Tenbury, February 17th.

Amaurobius ferox.—The spider sent me is *Amaurobius ferox*, adult male, one of our finest spiders, and, as you surmise, an inhabitant of dark dens and outhouses. It spins a tubular nest amongst rocks by the seaside, in quarries, or in cellars. The female often grows to a very large size, and is very fierce and formidable. The female has in the hind tarsi the *calamistrum*, which used with the *cribellum* (an extra pair of spinning organs) makes the flocculent silk peculiar to the webs of *Dictynidæ*, to which *Amaurobium* belongs. A figure of it will appear in an early plate. They themselves watch at the entrance to the tube.

LIST OF LEPIDOPTERA OF ABERDEENSHIRE AND KINCARDINESHIRE

BY WM. REID, PITCAPLE.

(Continued from Vol. I., page 164.)

Thera obeliscata, (variata).—Abundant among fir trees, a very variable species.

Thera firmata.—Local, but not rare among fir trees, can be found sitting on Scotch fir trunks, towards night, with its wings folded over its back.

Ypsipetes ruberata.—Local and rare. Mr. Esson captured several a few years ago at Derncleagh, and Mr. MacAldowie also had it from the same locality.

Ypsipetes impluviata.—Abundant among alders, variable.

Ypsipetes elutata.—Abundant, varies from bright green through every shade of brown and bright red to black ; combinations of all these colours are also found. Specimens from the moors are generally small and dark, or very brightly coloured, with a mixture of brown, black, and red, but seldom with any green : lower down they are large and nearly always green ; but I have taken nearly all the varieties in one wood, so that there is no hard and fast line of demarcation between the lowland and upland forms.

Melanthia rubiginata.—Rather local, but common in damp places in woods. The central bar in all our specimens exhibits a tendency to run across the wing unbroken.

Melanthia ocellata.—Abundant everywhere. Dr. Buckall points out "that our *Ocellata* are more smoky towards the apex of superior wings than in English examples."

Melanippe tristata.—Local, Braemar (Dr. White).

Melanippe subtristata (*Sociata*).—Common everywhere.

Melanippe montanata.—Abundant, and very variable. I saw a pure white specimen taken last year (1891) with the stigmata, or central bar, shewing as a round small dot.

Melanippe fluctuata.—Common everywhere, and also very variable.

Melanippe fluctuata var. Neapolista, (Mill).—Not rare, found everywhere where I have collected.

Anticlea badiata.—Rather rare about Inverurie and Pitcaple.

Anticlea derivata.—Rare at Inverurie and Fyvie, not scarce about Pitcaple

Coremia munitata.—Common everywhere, especially near streams.

Coremia propugnata.—Widely distributed, rather scarce.

Coremia ferrugata.—Common almost everywhere.

Camptogramma bilineata—Abundant everywhere, ♀'s vary much.

Phibalapteryx lignata.—Rare, Inverurie, Fyvie, and links at Aberdeen (L 201).

Cidaria psittacata.—Rather local, but not rare.

Cidaria miata.—Common, larvæ on birch and sallows.

(To be continued).

NATURALISTS OF THE DAY.

IV.—MISS ELEANOR A. ORMEROD, F.E.S., F.R.Met.S., &c.

The lady whose portrait we have the pleasure of presenting to our readers to-day is best known as Honorary Consulting Entomologist to the Royal Agricultural Society, in connection with which she has recently issued her fifteenth annual report. Only those who have read these volumes are qualified to judge of the services Miss Ormerod has rendered to Agriculture in England. While many are cognizant of the "scares" respecting "The Colorado Potato Beetle," "The Hessian Fly," or the recent immigration of "The Diamond-Back Moth," few are aware of the constant and serious injury done in many ways by insects in their various stages. A mere enumeration of the species treated on from time to time in Miss Ormerod's reports would occupy much of our space. In the last report seven pages are devoted to *Ephestia kuhniella*, one of the latest additions to our fauna, and which appears to be rapidly extending its ravages to various parts of the kingdom; and no less than sixty pages are given to a full report of the ravages of the Diamond-back Moth (*Plutella cruciferarum*), which inflicted so serious an injury on the turnips on the east coast last year. Miss Ormerod is also authoress of "A Manual of Remedies and Means of Prevention for the Attacks of Insects on Food Crops, Forest Trees, and Fruit," which has reached a second edition; "A Guide to Methods of Insect Life, and Prevention Remedy of Insect Ravage;" "The Hessian Fly in Great Britain;" "The Turnip Fly;" "The Warble Fly," &c., &c.

Obituary.

FRANCIS ARCHER.

It is with great regret I announce the death of my late friend, Mr. Francis Archer, B.A., F.E.S., &c., &c., who passed away on Monday, February 29th, after a week's illness, of diphtheria, at his residence, 21, Mulgrave Street, Liverpool, aged 52 years. He was the son of the late Francis Archer, Esq., M.R.C.S., a well-known medical practitioner of this town, who was also a Naturalist, his speciality being Conchology. He left two sons, both of whom inherited their father's inborn love of Natural History. His eldest son, Surgeon-Major Samuel Archer, has been much abroad with his regiment, and for years has been in the habit of contributing valued objects of Natural History to the Liverpool Museum. His brother, whose death we now so deeply mourn, held a high position his pro-

MISS ELEANOR A. ORMEROD,

F.E.S., F.R.MET. S.,

Honorary Consulting Entomologist to the Royal Agricultural Society.

BRITISH MUSEUM
NATURAL HISTORY

fession, that of a solicitor, and was much respected and beloved by his *confreres.* Mr. Archer was a man of high culture and most genial disposition, an ardent politician, and a born Naturalist. He was one of the first to accept the late Mr. Darwin's views on the "Origin of Species," &c. He possessed a very practical knowledge of Conchology and Entomology, and was always ready to assist and encourage young people in their scientific and Natural History investigations. He was one of the first to enrol himself a member of our "Lancashire and Cheshire Entomological Society," in which he always took a deep interest. His loss at so comparatively young an age is greatly deplored. Those who knew him intimately, as I have done for the last 25 years, will mourn a kind, congenial friend, whilst Science has one less ardent follower in Liverpool. S. J. CAPPER.

GOSSIPING NOTES ON BRITISH COLEOPTERA.

BY G. A. LEWCOCK.

(Continued from page 29).

L. HÆMORRHOIDALIS, F.—One of the doubtfully British species. There are but two records relating to its capture, viz. by the Rev. F. W. Hope, at Nettley, Shropshire, on broom; and *Stephens*, "Dr. Power has a specimen taken by Mr. Sidebotham, near Devizes." The collection at South Kensington Museum, does not contain even a type of this insect. Neither is it recorded by Mr. G. C. Champion nor Mr. J. J. Walker. Canon Fowler states that the palpi are reddish testaceous, with striæ of elytra indistinct, and interstices flat.

[Following *L. hæmorrhoidalis,* Canon Fowler likewise describes *L. turcica,* which differs from the former in having the striæ of elytra well marked, and the interstices convex. Its claim to be regarded as British rested for many years on four specimens reported to have been captured in Okehampton Park. Mr. W. H. Bennett (Hastings) also records it in the *Entomologist Monthly Magazine* for June, 1883. I am able to give, from Mr. Bennett's MS., an account of the capture of this beetle:—"My specimen was taken at Guestling early in the spring, and was quite a 'fluke.' I was on my knees before a sappy birch stump, when I saw a pretty geodephagous beetle rushing about on the ground. I secured it, and saw it was new to me. The next day I examined it, and soon found what a prize I had got. It is hardly necessary to say that I have never seen another." Canon Fowler remarks that this specimen appears to be authentic, but further confirmation of the species is much needed. Two specimens of the insect are contained in the collection of the South Kensington Museum.]

L. CYANOCEPHALA, L.—In this species the first joint of the antennæ is reddish, elytra slightly pubescent, and scutellum dark. Occurs in chalky places, under stones, in moss, and sometimes by sweeping, *Hypericum*, &c. Uncommon. Kent, Darenth, Wood, Dover, Surrey, Mickleham, Reigate, Ripley.—(G. C. CHAMPION, "Kent and Surrey Coleoptera.")

L. CHLOROCEPHALA, Hoff.—Distinguished from the preceding in having the first three joints of antennæ reddish, the elytra smooth, and scutellum red. The species is not uncommon, but, like many other insects, is wanting in several lists. It occurs generally in South of England. I have found it at Esher, by sweeping. Mr. Champion's record is as follows:—Under stones, in moss, on broom, beneath juniper. Local and common. Kent: Folkestone, Cuxton, Chatham, Dartford, Rainham. Surrey: Reigate, Ripley, Caterham, Walton-on-Thames, Shirley, Box Hill, Kenley ("Kent and Surrey Coleoptera"). Also taken by Mr. West (Greenwich) at Caterham, Betchworth Hills (juniper), and a small form at Plumstead under broom. On *Hypericum perforatum*, at Shirley (Hants) and Lewes (E. A. Newbery). Rare in Hastings district; taken by sweeping near broom in summer, and by shaking tufts of grass in winter (W. H. Bennett). One specimen taken near Bath by the late Mr. Gillo. Recorded by Mr. Gregson from bank of the Alt, Sefton (Dr. Ellis, "Liverpool Coleoptera"). Mr. Chappel, of Manchester, tells me he takes the species freely, hybernating under bark of poplar and aspens near the ground (W. E. Sharp, Ledsham). Also taken by Mr. Robson, Hartlepool. Several additional localities are given in Canon Fowler's "Coleoptera of British Islands" Ireland: Armagh.

Reports of Societies.

ENTOMOLOGICAL SOCIETY OF LONDON.

February 24, 1892.—Mr. Frederick DuCane Godman, F.R.S., President, in the chair. The Secretary read a letter from General Sir Dighton Probyn, K.C.B., Comptroller to the Prince of Wales, conveying the thanks of the Prince and Princess of Wales for the address of condolence with their Royal Highnesses in their severe bereavement, which had been forwarded to Sir Dighton Probyn by the Secretary, on behalf of the Society. Mr. Walter Cuthbert Biddell, of 32, The Grove, Bolton Gardens, S.W.; and Mr. Douglas Stuart Steuart, of North Leigh, Prestwich, Lancashire, were elected Fellows; and Mr. Philip de la Garde, R.N., was admitted into the Society. The President referred to the loss the Society had recently sustained by the death of Mr. Henry Walter Bates, F.R.S., who had twice been its President; and he also read a copy of the resolution of sympathy and condolence with Mrs. Bates and her family, in their bereavement, which had been passed by the Council at their meeting that evening. Mr. Frederick C. Adams exhibited a monstrous specimen of *Telephorus rusticus*, taken in the New Forest, in which the left mesothoracic leg consisted of three distinct femora, tibiæ and tarsi, apparently originating from a single coxa; he also exhibited specimens of *Ledra aurita*. Mr. G. A. James Rothney sent for exhibition a series of specimens of two species of Indian ants (*Myrmicaria subcarinata*, Sm., and *Aphænogastor* (*messor*) *barbarus*, L., var. *punctatus*, Forel), which had recently been determined for him by Dr. Forel. He also communicated notes on the subject, in which it was stated that *Myrmicaria subcarinata*, Sm., was not uncommon in Bengal, and formed its nests by excavating the earth round trees, and throwing it up in mounds of fine grains. The author also stated that both sexes of this species swarmed early in the "rains," from about July 7th to July 10th. Of the second species—*Aphænogaster barbarus* var. *punctatus*, Forel—Mr. Rothney observed that it, like the bee, *Apis dorsata*, seemed to have a great partiality for the gardens and buildings of the old Mogul Emperors in the North-West Provinces and in the Punjaub, the bee disfiguring the arches and roofs with its huge nests, and the ants frequenting the gardens and steps. The Hon. Walter Rothschild communicated a paper, entitled "On a little-known species of *Papilio* from the Island of Lifu, Loyalty Group." The paper was illustrated by a beautifully coloured drawing, by Mr. F. W. Frohawk, of the male, variety of the male, female, and underside of the species.

March 9th, 1892.—Mr. Frederick DuCane Godman, F.R.S., President, in the chair. Captain Clement Alfred Rigby Browne, R.E., care of Messrs. Grindlay, Groome, and Co., of Bombay; His Grace the Duke of Devonshire, LL.D., Chancellor of the University of Cambridge, of Devonshire House, 78, Piccadilly, W.; Mr. J. H. Leslie, of 44, Cheriton Square, Upper Tooting, S.W.; Mr. R. M. Lightfoot, of Bree Street, Cape Town, Cape of Good Hope; and Mr. Sidney Robinson of Goldsmith's Hall, E.C., were elected Fellows of the Society. Professor C. Stewart, President of the Linnean Society, exhibited and made remarks on specimens of *Cystocœlia immaculata*, an Orthopterous insect from Namaqualand, in which the female is far more conspicuously coloured than the male, and the stridulating apparatus of the male differs in certain important details from that of other species. A long and interesting discussion ensued, in which Dr. Sharp, Mr. Poulton, Mr. Distant, Mr. H. J. Elwes, Colonel Swinhoe, and Mr. Hampson took part. Mr. Elwes exhibited specimens of *Ribes aureum* which were covered with galls, as to the nature of which the Scientific Committee of the Horticultural Society desired to have the opinion of the Entomological Society. Mr. Fenn, Mr Tutt, and Mr. Barrett made some remarks on these galls. Mr. Elwes also exhibited a large number of species of Heterocera recently collected by Mr. Doherty in South-east Borneo and Sambawa. Colonel Swinhoe, Mr. Hampson, and Mr. Distant took part in the discussion which ensued. Mr. Barrett exhibited a series of *Noctua festiva*, bred by Mr. G. B. Hart, of Dublin, which represented most of the known forms of the species, including the Shetland type and the form formerly described as a distinct species under the name of *Noctua conflua*. Mr. Fenn and Mr. Tutt made some remarks on the specimens. Mr. W. C. Boyd exhibited a specimen of *Dianthœcia Barrettii*, taken at Ilfracombe last summer. It was remarked that Mr. W. F. H. Blandford had recorded the capture of *D. Barrettii*—which had until recently been supposed to be confined to Ireland—from Pembrokeshire, and that its capture had also since been recorded from Cornwall. Mr. Tutt exhibited specimens of *Polia xanthomisia* from Mr. Gregson's collection, which had recently been sent to him by Mr. Sydney Webb. Mr. G. A. James Rothney exhibited and read notes on a large collection of Indian Ants which he had made in Bengal between 1872 and 1886, comprising some 90 species. He stated that 18 of these species had been described by Dr. Mayr in his paper entitled "Ameisen Fauna Asiens," 1878; he also said that Dr. Forel had recently identified several other new species in the collection, and that there were about ten species and one new genus which Dr. Forel had not yet determined. Mr. H. Goss exhibited, for Mr. T. D. A. Cockerell, of Kingston, Jamaica, several specimens of palm leaves, from the garden of the Museum in Kingston, covered with *Aspidiotus articulatus*, Morgan. The leaves appeared to have been severely attacked, the scales entirely covering the upper surface in places. Mr. Cockerell had pointed out, in a letter dated 16th February last, that the species is notable for the sharp division between the thorax and abdomen; and that he had formerly distributed it under the name of *Aspidiotus rufescens*, but had since satisfied himself that it was identical with *A. articulatus* from Demerara. He added that the species fed on a variety of plants, and was known from Demerara, Jamaica, and Barbados. Mr. F. D. Godman contributed a paper by the late Mr. Henry Walter Bates, with an introduction by himself, entitled "Additions to the Longicornia of Mexico and Central America, with remarks on some previously-recorded Species." The Rev. A. E. Eaton communicated a paper entitled "On new Species of Ephemeridæ from the Tenasserim Valley."

March 23, 1892.—Dr. David Sharp, M.A., F.R.S., Vice-President, in the chair. The Hon. Mrs. W. Carpenter, of Kiplin, Northallerton, Yorkshire; and Mr. S. G. C. Russell, of 19, Lombard Street, E.C., were elected Fellows of the Society. The Secretary read a letter from the City of London Entomological and Natural History Society on the subject of a proposed Catalogue of the Fauna of the London District. Mr. G. C. Champion exhibited a number of new species of Longicornia from Mexico and Central America, recently described by the late Mr. H. W. Bates, in his paper entitled "Additions to the Longicornia of Mexico and Central America, with remarks on some previously recorded species," read at the last meeting of the Society. Mr. S. Stevens exhibited three very rare species of *Noctuæ*, viz., *Noctua flammatra*, *Leucania vitellina*, and *Laphygma exigua*, all taken by Mr. H. Rogers at Freshwater, Isle of Wight, in the Autumn of 1891. Mr. F. C. Adams again exhibited the specimen of *Telephorus rusticus* in which the left mesothoracic leg consisted of three distinct femora, tibiæ, and tarsi, originating from a single coxa, which he had shown at the meeting on the 24th of February last. The specimen was now reversed, to show the structural peculiarities upon which Dr. Sharp, Mr. Champion and Mr. Jacoby made some remarks. Mr. Osbert Salvin exhibited a series of mounted specimens of the clasping organs in the male of several species of *Hesperidæ*. Dr. Sharp exhibited, for Mr. F. D. Godman, a collection of Orthoptera recently made in the Island of St. Vincent, West Indies, by Mr. H. H. Smith, the naturalist sent to that Island by Mr. Godman in connection with the operations of the Committee appointed by the British Association and the Royal Society for the investigation of the Fauna and Flora of the Lesser Antilles. It was stated that the collection had recently been referred to, and reported on by Herr C. Brunner von Wattenwyl and Professor J. Redtenbacher. Mr. J. W. Tutt exhibited and made remarked on a series of various forms of *Orrhodia vaccinii* and *O. (spadicea) ligula*. Mr. C. G. Barrett exhibited and made remarks on a series of specimens—including some remarkable varieties—of *Bombyx quercus* and *Odonestis potatoria*. A long discussion ensued as to the probable causes of variation exemplified, in which Mr. Tutt, Mr. E. B. Poulton, Mr. H. Goss, Mr. Jacoby, Mr. Salvin, Mr. Bethune-Baker, Dr. Sharp, and Mr. Distant took part. Mr. G. A. James Rothney sent for exhibition a number of specimens of *Camponotus compressus*, *C. micans*, *Œcophila smaragdina*, *Sima rufonigra*, *Solenopsis geminata* var *armata*, and other species of Ants, from Calcutta, together with certain species of *Aphidæ* kept by them for domestic purposes; also certain of their enemies and parasites. He also communicated a short paper on the subject, entitled " Notes on certain species of Calcutta Ants and their habits of life.—H. Goss, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

February 25th, 1892.—C. G. Barrett, Esq., F.E.S., President, in the chair. Mr. J. W. Larkin, of Streatham, and Mr. A. L. Stephens, of Blackheath, were elected members. Mr. Cooper exhibited some specimens of *Porthesia chrysorrhœa*, received some years ago from Whittlesea Mere, Cambridgeshire, and pointed out that there were a number of black dots on the wings. Mr. J. Jenner Weir exhibited some examples of several species showing the wet and dry season forms of the same insect and remarked that it had now been placed beyond doubt that many species which were looked upon as perfectly distinct, were wet and dry season forms. Among the species exhibited were *Junonia asterie*, L., *J. almana*, L.; the wet season form of *Melanitis ismene*, Cran., and the dry season form of the same, *M. leda*; and Mr. Weir remarked that the two forms of *Melantis* were seasonal varieties, or, as he termed it, horœomorphic of one species had been set at rest by direct experiment. Mr. Weir contributed notes relative to his exhibit. Mr. R. Adkin exhibited Lepidoptera from the Scilly Isles, and remarked on the variation and called attention to the specimens of *Pieris napi*, *Lycæna icarus*, and *Cidaria russata*, which he said were species known to liable to somewhat pronounced local variations, and yet those he had received from Scilly were normal.—Mr. Adkin also exhibited light and dark cocoons of *Eriogastes lanestris*, and contributed notes. Mr. Tugwell exhibited cocoons of *Nola centonalis* and *N. albulalis* and referred to some remarks recently made by Mr. Tutt that the coloration of cocoons was produced by anal excreta; Mr. Tugwell stated that he did not agree with this view. A discussion followed relative to these last two exhtbits in which Messrs. Jenner Weir, C. Fenn, W. West, South, C. G. Barrett, Carrington, Tugwell, and Adkin took part. It was pointed out that recent discoveries had shown that this was renal excreta. Mr. Billups exhibited specimens of minute Mollusca. and read notes thereon.

March 10th, 1892.—The President in the chair. Mr. Jenner Weir exhibited pallid forms of the following British Rhopalocera, viz:—*Satyrus semele* ♀, *Epinephele ianira* ♀, *E. hyperanthus* ♀, *Cœnonympha typhon* ♂, *C. pamphilus* ♀ three specimens, and *Polyommatus phlæas* ♂. These xanthous specimens were all of them much paler in colour than usual, and he regretted that he could not suggest a cause for this want of colour except in the case of *Epinephele ianira*; this insect he had taken in the New Forest during the very wet and cold season of 1879, in a damp wood, the temperature was then so low that when *Argynnis paphia* was pursued it took refuge in the thick brambles, being too weak to fly far, and *Argynnis euphrosyne* had its emergence delayed through July, in some cases even till so late as the 9th August. His view was that the development of pigment was due to what might be termed surplus energy, and the the vitality of either the larva or chrysalis was lowered by unfavourable environment, then the result might be that the imago would be defective in colour. Mr. W. C. Richter then delivered a lecture on "Insects," illustrated by original diagrams and colored drawings, the majority of the latter being enlargements of the objects as seen through the microscope, and he stated that many of them had not hitherto been figured. Owing to this paper the remaining exhibits were not taken, and the discussion on Weir's paper stood over until the next meeting.—H. W. Barker, Hon. Sec.

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

Thursday March 3rd 1892.—Exhibits:—Mr. Clark, preserved larvæ of *Orgyia gonostigma*, *Dasychira fascelina* and *Lasiocampa quercifolia*, the latter being taken on the Hacking Marshes last year. Mr. Battley, typical forms of *Pieris rapæ* and *P. napi*, and intermediate form taken at Cheshunt. The underside of this insect was very slightly "veined" though the upper surface presented the characteristic of *P. napi*. Mr. Tutt and others expressed their opinion that it was a lightly marked form of *P. napi*. Mr. Tremayne, *Hybernia rupicapraria* and *Scopelosoma satellitia* from Epping Forest. Mr. Bayne, series of *Cheimatobia brumata* and *C. boreata*, and a very dark form of *Tæniocampa populeti* from Norfolk. Mr. Riches, series of *Arctia lubricipeda* and *A. menthrasti*, also a var. of *Ennomos angularia*, and a suffused form of *Melanippe* *fluctuata.* Mr. Southey, a series of *Himera pennaria* from the Highgate Woods, including a very small female. Mr. Milton, *Deilephila galii*, said to have been taken at Swanley last year; also *Endromis versicolor*, *Diphtheria orion*, and *Plusia festucæ*. Coleoptera;—Mr. Burrows, *Loricera pulicornis*, *Dromius quadrimaculatus*, *D. meridionalis*, *Stenus bimaculatum*. Mr. Lewcock, a number of species of British Coccinellidæ; also exhibits of Coccinellidæ on behalf of Mr. W. E. Sharp, of Chester, Rev. W. F. Johnson, of Armagh, and Mr. H. G. Cuthbert, of Dublin. Messrs. Heasler, Elliman and Cripps also exhibited Coccinellidæ. The paper on the subject then read by Mr. Lewcock. In the course of the discussion which followed, Mr. Tutt called attention to the variability of the group, and remarked that, from what he had seen, he thought the colours of the spots were not interchangeable, and that the ground colour (red) appeared as spots from the spread of the black markings over the elytra. Messrs. Heasler and Cripps of Mr. Tutt. Mr. Lewcock, however, was of opinion that the red spots sometimes replaced the black. On the motion of Messrs. Tremayne and Tutt, a vote of thanks was accorded to Mr. Lewcock for his paper. Mr. Clark announced that a specimen of the Dunlin *(Tringa variabilis)* had been shot on Tottenham Marshes by Mr. Skertchley. He also announced the decision of the Council to charge members 1/- for second copies of the "Transactions for 1891," and non-members 2/-.

March 17th, 1892.—Mr. Hodges, varieties of *Polia flavicincta* from Portland and Guernsey, and some fine banded forms of *Agriopis aprilina* from Durham. Mr. Gates, a living specimen of *Melanippe montanata*, bred from larvæ previously exhibited on 17th December, 1891. Mr. Gurney, *Amphidasys prodromaria*, *Phigalia pilosaria*, &c., from Epping Forest, at Wood Street. Mr. Tremayne, a very light specimen of *Hybernia leucophæaria* from West Wickham. Mr. Prout, bred series of *Coremia unidentaria* and *C. ferrugata*. Mr. Nicholson, bred specimens of *Hemerophila abruptaria*, second brood. He pointed out that these were smaller and darker than the spring brood. Mr. Sykes, a specimen of *Leucania impura*, approaching the var. *punctilinea*, Tutt, taken at Enfield. Messrs. Clark, Tutt, Hodges, Battley, Southey, Milton, and Dr. Buckell exhibited their series of the genus *Hadena*. Coleoptera: Mr. Heasler, a specimen of *Plinthus calignosus*, taken at Greenwich. Mr. Milton, various beetles; and in Hymenoptera, *Abia fasciata*, *Cerceris arenaria*, *Gorytes mystaceus*, and *Ammophila lutaria*. Mr. Riches, flowers of *Polygonatum multiflorum* (Solomon's Seal), and *Dicentra spectabilis*. Mr. Tutt then read his paper on the genus *Hadena*. The discussion was continued by Messrs. Battley, Lewcock, Buckell, Milton, Southey, Tremayne, and others, and a vote of thanks was unanimously accorded to Mr. Tutt for his paper.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.

March 14th.—The president, Mr. S. J. Capper, F.L.S., F.E.S., in the chair. Messrs. H. Locke, of Birkenhead, and G. Norel Deville, of Grosby, were elected members. The president referred to the loss the society and naturalists generally had sustained by the death of Francis Archer. Mr. William Webster, of St. Helens, read a paper entitled "Was Shakespeare an Entomologist?" The author stated he had examined the works of the poet, and found 207 references to insects, and as far as could be ascertained, mention of 30 kinds of insects, and showed by numerous quotations, that Shakespeare not only possessed a fair knowledge of entomology but that he was a philosophical observer of nature. Mr. Willoughby Gardner, F.R.G.S., read a short note on the "Popular names of insects about Shakespeare's time" some few of which still existed in country places. Mr. Webster exhibited *Papilio xcalmoxis*. The president, Messrs. Stott, Harker and the Hon Secretary, long and variable series of *Noctua festiva* and *conflua*, Messrs. Harker and Jones British and continental forms of *Lycaena icarus*.—F. N. Pierce, *Hon. Sec.*, 143 Smithdown Lane Liverpool.

Rev.

British Museum Natural History

EXCHANGE.

*Lepidoptera marked * are bred.*

Duplicates—Cardamines, Rhamni, Corydon, Paphia, Cardui, S. populi, Menthastri, Dispar eustria, Vinula, Cæruleocephala, Ianthina, C. nigrum, N. rubi, Litura, Vaccinii, Satellitia, erago, Ferruginea, Chi, Oxyacanthæ, Meticulosa, Protea, Oleracea, Testacea, Nupta, Scutulata, ilosaria, Illunaria, Elinguaria, Tiliaria, Pennaria, Miata, Prunaria, Maculata, Desiderata, very umerous, also ova, larvæ and pupæ.—W. E. Butler, Hayling House, Oxford road. Readings.

Duplicates—Fine well set. Kent D. Galii, Sussex, Sphegiformis and Braemar Exulans. esiderata—dark melanic forms or well marked. Mendica, Pilosaria, Abruptaria, Repandata, repuscularia, Biundularia, Clathrata, Ruberata, Rubiginata, Glareosa, Rumicis, &c., or C. ericelis, Myellus, Furcatellus. Only perfect examples sent or received.—W. H. Tugwell, 6 Lewham road, Greenwich, S.E.

Exchange.—Wanted to exchange "The Naturalist," from August, 1881, to December, 1891, r "The Midland Naturalist," Conchological Books, or Shells.—W. A. Gain, Tuxford, Newark

Desiderata.—A. prunaria, G. obscurata, E. heparata, L. flavicinclata, M. rubiginata, M. astata, tristata, S. undulata, C. russata, immanata, and very many common species. I will ndeavour to make a good return.—John E. Robson, Hartlepool.

Exchange.—Duplicate clutches of Sooty and Noddy Terns, Manx Shearwater, Mute Swan, olden-winged Woodpecker, American Robin, Tits, Buntings, and others. Wanted other sorts f sideblown eggs with data, &c.—F. W. Paple, 62 Waterloo-street, Bolton.

Exchange.—Wanted, British Coleoptera and Lepidoptera, or books on Entomology, in xchange for Periodicals.—Thos. W. Wilshaw, 455 Shoreham-street, Sheffield.

Exchange.—Duplicates:—Hesperia lineola in good condition. Desiderata:—Hastata, ajularia, Saponaria, Lunaria, &c.—F. Milton, 184 Stamford Hill, London, N.

Duplicates—British Coleoptera, a few Hemiptera and a few land and marine shells—esiderata, Coleoptera, Lepidoptera, and other orders and named types of British and foreign ells.—A. Ford, Claremont House, Upper Tower Road, St. Leonards-on-Sea, Sussex.

Exchange—Duplicates—Aglaia, Cardamines, Sylvanus, Alexis, Ulmata, Jacobæa, Auriflua, ubiginata, and Chi, Desid. Numerous.—F. Emsley, 98, West Street, Leeds.

Exchange, Duplicates.—Alexis, Artaxerxes, Carpini,* Plantaginis,* Velleda, L. dispar,* llustraria,* Suffumata, Ribesiaria, Conigera, Nictitans, Tenebrosa, Tritici, Valligera, Lucernea, estiva vars., Neglecta, Suspecta, Rufina, Adusta, Dentina, Solidaginis.—William Cowie, 5, anal Street, Aberdeen, N.B.

Exchange.—Wanted Tertiary fossils, named and located. Offered in return Mediterranean hells, lepidoptera, &c., state desiderata; offered also Foraminifera, mounted or unmounted.—. H. Cooke, Highland House, St Julian's, Malta.

CHANGE OF ADDRESS.

ITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY from ALBION HALL, LONDON WALL to 33, FINSBURY SQUARE, E.C.

MEETINGS OF SOCIETIES.

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY 33 Finsbury Square, E.C. Meetings.—*Thursdays*, Fixtures: pl. 7, The Life-history of L. Salicis, Mr. A. N. Battley. April 21st.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge, S. E. Meetings second and ourth *Thursdays* in each month. *Apr. 14th*—Microscopical Evening. *April 28th*—Paper 'Lichens," Mr. E. Step. *May 5th and 6th*—ANNUAL EXHIBITION, open on 5th from to 10.30 p.m.; 6th, from 1 to 10 p.m. Full particulars and tickets can beobtained from the btained from the Hon. Sec., Mr. H. W. Barker, 147Gordon road, Peckham, S.E.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY, Free Library, William Brown St., Liverpool.

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TO CORRESPONDENTS.

By reducing the leads between the lines, space equal to nearly three additional pages has been gained, without giving the Magazine the crowded appearance that is so painful to read.

A portrait of Miss Ormerod, F.E.S., &c., is given with the present part forming the fourth of a series of portraits of Naturalists of the day. Othe portraits are in rapid preparation.

Arrangements are now completed for continuing the Molluscan Sectio W. A. Gain, Esq., of Tuxford, Newark, has kindly undertaken the Land an Fresh Water Mollusca, and Brocton Tomlin, Esq., of The Green, Llandaff, wi attend to the Marine Section. Communications may be made to either of thes gentlemen. All letters requiring a reply by post should contain stamp.

The Section for Coleoptera is conducted by G. A. Lewcock, Esq., 7 Oxford Road, Islington, to whom also direct communication may be made.

Mr. Lewcock also represents the Magazine in London, and will receiv subscriptions, papers, and notes for publication, &c., &c.

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THE
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WITH THE ASSISTANCE IN VARIOUS DEPARTMENTS OF

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THE HYMENOPTERA-ACULEATA OF LANCASHIRE & CHESHIRE,

BY WILLOUGHBY GARDNER, F.R.G.S.

(Continued from page 32).

PEMPHREDONIDÆ.

The females of this family often burrow in dead tree trunks, posts, &c. *(P. lugubris)*, or in rose and bramble sticks *(P. unicolor, P. lethifer, D. tristis, Stigmus pendulus*, and *P. insignis)*, and sometimes in sandy banks *(D. minutus* and *S. troglotydes).* They prey usually upon Aphides, collected from roses and other plants.

DIODONTUS, Curt.

minutus, Fab.—Bowden, B.C.

PEMPHREDON, Latr.

lugubris, Fab.—Abundant in the district, B.C. Taken at Bold, H.H.H.

unicolor, Latr.—Abundant, B.C. Taken frequently at Chester, on lilac leaves, E.C.T., R.N.

lethifer, Shuck.—Abundant B.C. Bred from bramble stems at Great Meols, W.G.

MIMESIDÆ.

Economy various; *Mimesa unicolor* and *Psen pallipes* make their cells in the hollow straws of a thatched roof, and *P. pallipes* sometimes burrows in bramble stems; *M. bicolor* forms large colonies in sandy districts. *Psen pallipes* preys upon Aphides and *M. bicolor* upon species of Tettigonia.

MIMESA, Shuck.

bicolor, Jur.—Delamere, B.C.

PSEN, Latr.

pallipes, Panz.—*atratus*, Panz, Shuck, &c.—Manchester and Bowden, B.C., and taken in Cheshire, J.T.G.

NYSSONIDÆ.

These brightly coloured insects apparently deposit their eggs in empty burrows previously excavated by other species; they are very partial to the flowers of the wood-spurge and prey upon various larvæ.

NYSSON, Latr.

spinosus, Fab.—Common in the district, B.C.

GORYTES, Latr.

mystaceus, Linn.—Manchester, Bowden, Hazelgrove and Marple, B.C., Halsnead, H.H.H.

MELLINIDÆ.

The commonly distributed *M. arvensis* preys upon various Dipterous insects—*Muscidæ*, *Syrphidæ*, &c.; it may often be seen lying in wait for these by the side of a patch of cow dung. It burrows in sandy banks, gregariously.

MELLINUS, Fab.

arvensis, Linn.—Abundant in our district, B.C., Delamere, E.C.T., Bidston Hill, J.T.G.

CERCERIDÆ.

The species comprising this family are chiefly gregarious, forming large colonies of tunnels in the ground, some, as *C. arenaria*, preferring loose sandy soil, and others, as *C. interrupta*, choosing hard trodden pathways. The prey varies according to species, *Philanthus* attacking bees *(Andrena*, *Halictus*, and *Apis)*, *C. ornata* and *C. labiata*, bees, *(Halictus)*, *C. arenaria*, beetles, *(Otiorhynchus* and other *Curculionidæ)* and *C. interrupta*, beetles, *(Apionidæ)*.

CERCERIS, Fab.

arenaria, Linn.—Formerly common on the Cheshire coast, B.C.

CRABRONIDÆ.

This large family contains species with very various places of nidification, and preying upon many different kinds of insect life. Some form burrows in sandy banks *(C. cribarius*, *peltarius*, *varius*, *Westmaeli*, *E. brevis*, and *Oxybelus)*, some in decayed wood *(C. clavipes*, *leucostoma*, *chrysostoma*, *vagus*, *4-maculatus*, *cephalotes)*, some in bramble and rose sticks *(C. tibialis* and *clavipes)*, and some in the mortar of old brick walls *(C. elongatulus)*. The food stored up for the future grub is diversified according to the species, including Diptera *(Crabro leucostoma*, *cephalotes*, *cribarius*, *peltarius*, *vagus*, *chrysostoma*, *4-maculatus*, *podagricus*, *Westmæli*, and the *Oxybeli)*, Aphides *(C. elongatulus)*, and Coleoptera of the genus Haltica *(E. brevis)*.

CRABRO, Fab.

clavipes, Linn.—*rufiventris*, Panz.—Higher Bebington, near Birkenhead, J.T.G.; generally distributed, B.C.

leucostoma, Linn.—Manchester and Hazelgrove B.C.; Rainhill H.H.H.; and Chester, common on lilac and laurel, E.C.T.

podagricus, V. d. Lind.—Hazelgrove, B.C.

palmipes, Linn.—*tarsatus*, Shuck.—Several taken at burrows in sandy bank by roadside, Sandiway near Cuddington, R.N.

elongatulus, V. d. Lind.—*luteipalpis*, Shuck.—*propinquus*, Schuck. —*obliquus*, Schuck.—*hyalinus*, Shuck.—Manchester, Hazelgrove Delamere, and Cheshire Coast B.C.

dimidiatus, Fab.—Chester, E.C.T., Cheshire Coast, B.C., West Kirby, ordinary type and a remarkable variety of male almost entirely black, J.T.G.

vagabundus, Panz.—Higher Bebington J.T.G.; commonly distributed B.C.

4-maculatus, Fab.—*subpunctatus*, Shuck.—Bowden and Delamere B.C.; Delamere, E.C.T.

cribrarius, Linn.—Wallasey, H.H.H.; West Kirby, J.T.G. Delamere, E.C.T.; and general in district, B.C.

peltarius, Schreb.—*patellatus*, Panz.—Manchester, Southport, and Cheshire coast, B.C.; and West Kirby, J.T.G.

cephalotes, Panz.—*sexcinctus*, Sm.—*interstinctus*, Sm.?—Bowden, B.C.

chrysostoma, Lep.—*xylurgus*, Shuck.—Commonly distributed, B.C.; Higher Bebington, J.T.G.; Ince, frequent, R.N.; and Eaton Hall near Chester, E.C.T.

interruptus, De Geer.—*Lindenius*, Shuck.—Cheshire coast, B.C.

OXYBELUS, Latr.

uniglumis, Linn.—Bowden, Southport, and Cheshire coast, B.C. Wallasey, W.G.; Rock Ferry near Birkenhead, with one specimen nearly black, J.T.G.

mucronatus, Fab.—*argentatus*, Curt.—*ferox*, Shuck.—This rare species was taken on Cheshire sand hills, opposite Liverpool, by Mr. Matthews prior to 1836 (*v.* Schuckard's "Fossorial Hymenoptera.") It has since been recorded from same district by Mr. B. Cooke.

(To be continued.)

THE SECONDARY SEXUAL CHARACTERS OF THE BRITISH COLEOPTERA.

BY JOHN W. ELLIS, M.B. (VIC.), F.E.S.

While in a great number of beetles, as in other insects, no apparent difference is observable between the male and female, in others, so different are the sexes that very frequently they have been described under two names as distinct species until further observation has proved their unity.

The various modifications of form and colour which frequently distinguish the sexes of the coleoptera are of value to the systematic entomologist mainly as affording characters for the differentiation of closely allied species, for rarely are the secondary sexual characters of sufficient constancy to be of utility in the classification of families, and only occasionally can they be relied upon in the constitution of any but the small genera—small, that is, in the number of contained species. But though of little real value from a systematic point of view, the philosophic mind is able to find much of interest in the study of such details of sexual difference from the point of view of their teleological significance, for, if we admit the Darwinian hypothesis of evolution, we are forced to believe that these sexual peculiarities have in the present, or have had in the past history of the species, some purpose to fulfil in the economy of their possessors. It is interesting to observe how frequently some of these modifications of structure occur in widely separated groups of beetles often differing greatly in habit; and with a view to facilitate comparison of the distribution of the various types of secondary sexual characters in the British beetles the subject has been approached from an anatomical, rather than from a systematic point of view, and these various characters will be considered under the following heads:—

(*a*) size. (*b*) texture. (*c*) colour. (*d*) structure.

SIZE.—Among the coleoptera, as in the insect world generally, we find that the female tends to preponderate in size, and especially, as might be expected, is this noticeable in the increased size of the abdomen, which, among the British species, reaches its maximum in the bloated females of *Melöe* and in the apterous females of *Lampyris* and *Drilus*.* In a few British beetles, however, the males are somewhat larger than the average females, and this is the case in the larger Staphylinidæ (*Ocypus*, *Creophilus*), *Dysticus*, *Dorcus*, and, most noticeably of all, in the fully developed males of *Lucanus cervus*.

TEXTURE.—I use this word to denote the condition of the upper surface of the insects under consideration; and though this is a character of great importance in the systematic study of the order, it is only in a few groups of beetles—sometimes only in isolated species—that we find any appreciable dis-similarity between the sexes in the amount or character of the pubescence or sculpture, and when there is a difference in texture the female is almost always duller and less shining than her frequently highly-polished mate. Not only do we meet with this condition among insects characterised as a group by their brilliancy, as the Chrysomelidæ, where the females are (as in *C. marginata*) of a silkier texture than the males, but also, and chiefly, does this difference present itself in the nocturnal predaceous ground-beetles (Geodephaga) and in the carnivorous water beetles. Thus, of the former may be quoted as examples: the duller females of both British *Licini;* those of most *Calathi;* of *Pterostichus vitreus* and *P. oblongopunctatus*, and especially of *P. striola* where the female is much more finely striate on the elytra ; *Oodes helopioides;* most true *Amaræ* (in which the females appear more deeply striate); many *Harpali*, such as *H. tenebrosus*, *tardus*, *serripes*, and most noticeably in the females of *H. rubripes* and *discoideus* which are dull and obscure while the males are often brilliant blue, green, or metallic. In the Hydradephaga (carnivorous water-beetles) it is quite common for the female to be dull while the male is shining, as is seen in *Hyphidrus ovatus*, many *Hydropori*, *Agabus bipustulatus*, the *Gyrini*, &c.; while it is in this group alone of the British Coleoptera that we meet with any indication of sexual dimorphism, but which here, in a comparatively small group of insects, presents itself in two forms. In the first and most frequent of these, seen in *Bidessus uni-striatus*, *Cœlambus novemliniatus* and *picipes*, *Hydroporus erythrocephalus* and *memnonius*, *Agabus uliginosus*, &c., the male, following the rule, is shiny, while the female occurs in two forms, the one polished like (and scarcely distinguishable from) the male, the other dull and opaque. Another and more remarkable difference in the sculpture of the sexes is present in the genera *Dysticus* and *Acilius*. In the first of these, where the elytra or wing-covers of the male are smooth and very highly polished, those of the females are deeply grooved longitudinally. It is in this genus that we meet with the second form of sexual dimorphism, for in all the British species except *punctulatus* and *dimidiatus* the female also occurs with the elytra *not sulcate*, differing only from those of the male in having some fine punctuation towards the apex.* In *Acilius* the elytra of the male are somewhat polished, while those of the female are not only sulcate, but the grooves, which are wider than those of *Dysticus*, four in number, are clothed with long yellow hairs. In the genera *Onthophagus* and *Aphodius*, indeed in the Scarabæidæ generally, the head of the female is often more coarsely punctured than that of the male; and in the *Aphodii* it is usual for the male thorax to be punctured only towards the sides, leaving the disc smooth, while that of the female has the punctures not only coarser but sprinkled more generally over the surface. The males of many *Cryptocephali* are often more strongly punctured than the females.

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* In the early days of spring the Wallasey sandhills swarm with the common coast weevil—*Philopedon (Cneorhinus) geminatus;* and these are so frequently found *in copulâ* crawling on the bare sand, and the disproportion of the sexes is so great, that one of my entomological acquaintances was obliged to meet the enquiries of his children by informing them that the large specimens were the "mothers carrying their babies."

The only exceptions that I know to the rule that the female is the duller sex occur in *Lucanus* and *Dorcus*. In *Lucanus cervus* the head and thorax of the male are dull, and, the head especially clothed with short pubescence, and the elytra are only slightly shining, while in the female the whole surface is destitute of pubescence and much more shining. The same remarks apply to the sexes of *Dorcus* except that in neither is there any clothing of hair.

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* It is worth while to notice here that according to Canon Fowler, Dr. Power's collection contains a female specimen of *Dysticus circumcinctus* intermediate between the two forms—shewing traces only of longitudinal sulci.

The males of several *Aphodii* (*A. contaminatus*, e.g.) and of *Trichius* are usually clothed with longer pubescence than is the case in the other sex.

In the males of two rare longicorn beetles, *Monochammus sutor* and *sartor* the elytra are black without marking, while in the female the wing covers are sprinkled with whitish pubescence arranged in small spots.

(To be continued).

LIST OF LEPIDOPTERA OF ABERDEENSHIRE AND KINCARDINESHIRE

BY WM. REID, PITCAPLE.

(Continued from page 81.)

Cidaria corylata.—Not rare, but rather local.

var. albo-crenata.—Very rare.

Cidaria russata.—Generally rather scarce, but widely distributed, and very variable.

Cidaria immanata.—Abundant, exceeding variable.

Cidaria suffumata.—Common.

var. piceata.—Not rare.

Cidaria silaceata.—I have only taken a very few, and am inclined to think it is local and scarce.

Cidaria prunata.—Abundant in many places, absent from others, rare at Pitcaple.

Cidaria testata.—Generally common, very dark varieties are sometimes taken.

Cidaria populata.—Always common on the moors and in woods among bilberry, exceedingly variable.

Cidaria pyraliata.—Sometimes very common.

Cidaria fulvata.—Sometimes common.

Eubolia mensuraria.—Abundant in many places

Eubolia palumbaria.—Often common on the moors.

Carsia imbutata.—Local, common about Braemar.

Anaitis plagiata.—Common almost everywhere.

Chesias spartiata.—Abundant among broom.

Chesias obliquaria.—Widely distributed, but generally rather scarce.

Tanagra chærophyllata.—Abundant on waste ground and along the coast.

CUSPIDATES.

PSEUDO-BOMBYCES.

Platypteryx lacertula.—Local, not rare flying at dusk, larvæ common on birch.

Platypteryx falcula.—Local and scarce.

Dicranura furcula.—Widely distributed, larvæ sometimes common.

Dicranura vinula.—Common everywhere, larvæ on Sallow, Willow and Poplar.

Pygæra bucephala.—Larvæ often abundant.

Notodonta camelina.—Abundant at edges of woods, flying at dusk, very variable, larvæ common on almost all trees, with exception of firs and pines.

Notodonta dictæa.—Larvæ common on poplar.

Notodonta dictæoides.—Larva not rare about Pitcaple on Birch, scarce elsewhere.

Notodonta dromedarius.—Not scarce, we only get the dark variety *perfusca* here, larvæ often very common on small isolated birch trees.

Notodonta ziczac.—Larvæ common everywhere, unlike *dromedarius* which is smaller and darker, our *ziczac* are larger and brighter coloured that any I have seen from England.

NOCTUÆ.

Thyatira batis—Common, flies at dusk by the edges of woods, comes to treacle, and the larvæ are found on Raspberry.

Cymatophora duplaris.—Sometimes not rare, flies at dusk, comes to treacle, and the larvæ are sometimes found on birch.

Cymatophora or.—Rare, Braemar, Pitcaple, Inverurie, and near Fyvie.

Cymatophora flavicornis.—Not rare at light, and at rest on trees, fences, &c., larvæ common between united birch leaves.

Bryophila perla.—Professor Trail records it from Stonehaven, Old Aberdeen and Dyce.

Dipthera orion.—Once at Derncleugh, (Horne).

Acronycta psi.—Common everywhere.

Acronycta leporina.—The larvæ has been found near Fetternear and Banchory.

Acronycta ligustri.—Very rare, larvæ uncommon, Banchory, &c.

Acronycta rumicis.—Local, and not common

Acronycta menyanthidis.—Widely distributed, and not uncommon, larvæ generally in wet bogs, and heaths.

Acronycta myricæ.—Fairly uncommon everywhere, larvæ feeding on low plants.

Leucania conigera.—Common at flowers, larvæ feeding on grass by night.

Leucania lithargyria.—Abundant almost everywhere.

Leucania impura.—Common, generally distributed.

Leucania pallens.—Abundant.

(To be continued).

Reports of Societies.

ENTOMOLOGICAL SOCIETY OF LONDON.

April 13th, 1892.—Henry John Elwes, Esq., F.L.S., Vice-President, in the chair. Mr. Francis Jaffrey, M.R.C.S., of 8, Queen's Ride, Barnes, S.W., was elected a Fellow of the Society. Mr. R. McLachlan exhibited specimens of *Anomalopteryx chauviniana*, Stein, a Caddis-fly remarkable for the abbreviated wings of the male, the female having fully developed wings; he alludes to the *Perlidæ* as including specimens in which the males were frequently semi-apterous. Dr. Sharp enquired if Mr. McLachlan was aware of any order of insects, except the Neuroptera, in which the organs of flight were less developed in the male than in the female. Mr. C. G. Barrett and Mr. H. J. Elwes cited instances amongst the *Bombycidæ* in which the wings of the male were inferior in size and development to those of the female, Dr. Sharp exhibited specimens of both sexes of an apparently nondescript phasmid insect allied to *Orobia*, obtained by Mr. J. J. Lister in the Seychelles islands, together with *Phyllium gelonus*. He also exhibited specimens of both sexes of an Acridiid insect, of the group *Proscopides*, remarkable for its great general resemblance to the *Phasmidæ*, though without resemblance, so far as is known, to any particular species. In reference to the *Phyllium*, Dr. Sharp called attention to the fact that the similarity of appearance of parts of their organisation to portions of the vegetable kingdom was accompanied by a similarity, amounting almost to identity, of minute structure. He said that it had been stated that the colouring-matter is indistinguishable from chlorophyll, and that Mr. Lister had informed him that when in want of food a specimen of the *Phyllium* would eat portions of the foliaceous expansions of its fellows, although the *Phasmidæ* are phytophagous insects. The resemblance to vegetable products reached its maximum of development in the egg; and Mons. Henneguy had observed that when sections of the external envelope of the egg of *Phyllium* are placed under the microscope no competent botanist would hesitate to pronounce them to belong to the vegetable kingdom. Dr. Sharp also stated that in some species of *Phasmidæ* it was easy to obtain the egg by extraction from a dried specimen. Mr. Barrett exhibited, for Major J. N. Still, a specimen of *Notodonta bicolara*, which had been captured in a wood near Exeter. Major Still had stated that the captor of the specimen was unaware of the great rarity of the species. Mr. Barrett also exhibited, for Mr. Sydney Webb, some remarkable varieties of *Argynnis adippe* and *Cænonympha pamphilus*; also two specimens of *Apatura iris*, and two of *Limenitis sybilla* in which the white bands were entirely absent. The Hon. Walter Rothschild exhibited, and contributed preliminary notes on, some hundreds of Lepidoptera, representative of a collection of some 5000 specimens recently made in five weeks by Mr. W. Doherty, in the South-west of Celebes. The collection included species of *Nectaria*, *Ideopsis*, *Saletaria*, *Limnias*, *Radena*, *Tirumala*, *Euplœa*, *Lethe*, *Melanitis*, *Mycalesis*, *Yphthima*, *Elymnias*, *Amathusia*, *Pseudamathusia*, *Discophora*, *Acræa*, *Ergolis*, *Cethosia*, *Cynthia*, *Cupha*, *Terinos*, *Cirrhochroa*, *Junonia*, *Precis*, *Rhinopalpa*, *Xoma*, *Cyrestes*, *Hypolimnas*, *Euripus*, *Rohana*, *Parthenos*, *Neptis*, *Athyma*, *Symphædra*, *Euthalia*, *Limenitis*, *Abisara*, *Huphina*, *Catopsilia*, *Eronia*, *Appias*, *Ornithoptera*, *Papilio*, &c., and several species of *Hesperidæ*. Many of the species were new, and others very rare. Mr. Elwes, Colonel Swinhoe and Mr. S. Stevens commented on the interesting nature of this collection, and a vote of thanks to Mr. Rothschild for exhibiting it was passed by the meeting. Mr. E. B. Poulton gave a lecture "On the denudation of the Scales in certain species of Lepidoptera," and illustrated it by a large number of photographs shown by means of the oxyhydrogen lantern. Mr. G. F. Hampson, Mr. Elwes, and Mr. Poulton took part in the discussion which ensued.—H. Goss, *Hon. Secretary.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

March 24th, 1892.—C. G. Barrett, Esq., F.E.S., President in the chair. Mr. J. R. Burt, of Streatham was elected a member. Mr. T. Merrifield exhibited examples of *Selenia illustraria*, *S. illunaria*, *S. lunaria*, *Vanessa urticæ*, *Platypteryx falcataria*, *Chelonia caja*, and *Bombyx quercus* and var. *callunæ* to illustrate the effects of temperature on these species. Mr. Merrifield prefaced his remarks on the experiments he had made by referring to those of Weisman and Edwards which were made on seasonally dimorphic species, he said the results obtained by him were consistent with those of these gentlemen but he went further than they did and he found by subjecting the pupa to certain temperatures he invariably, in the majority of the specimens, obtained certain results, a lower temperature generally producing examples which were darker and more intense in colour than those subjected to higher temperatures. In *illustraria* a brood divided into two portions and one placed at a temperature of about 80 degrees produced normal specimens while the other portion placed at a temperature of from 50 to 60 degrees were strikingly darker in colour; the same results were obtained with *illunaria* and *lunaria* and *E. autumnaria*, but in these last named species they were not quite so pronounced. *P. falcataria*, *B. quercus* its var. *callunæ*, *C. caia* and *V. urticæ* were similarly affected but in a lesser degree than the species of *Selenia*; in *V. urticæ* some of the examples closely approached the var. *polaris*, the specimens subject to the lower temperatures being generally darker and the blue crescents more intense in colour. In conclusion Mr. Merrifield said a temperature of 47 degrees seemed to stunt the size and produced a large proportion of cripples, higher temperatures than this seemed more conducive to health and vigour; it had been suggested that the results he had obtained were attributable to the unhealthy conditions to which the pupæ were exposed but this was not at all a correct explanation, in the 172 specimens he exhibited 150 were not cripples, extreme temperatures produced crippling, but moderate temperatures were quite sufficient to account for the extreme difference of colouring. Mr. Fenn said he had since 1859 paid great attention to the earlier stages of Lepidoptera and he assumed variation was either natural or artificial; that natural variation might be again divided into three nearly equal causes, viz.: Heredity, moisture and natural selection. In artificial variation the causes might generally be said to be abnormal or diseased, by the term disease he meant a general weakening of the constitution by unnatural influences, the least deviation from natural conditions might lead to variation. Mr.

Fenn then remarked that the temperature necessary to alter the colour, viz.: 47 to 57 degrees, and 57 degrees alone was quite sufficient to put at least all our winter, spring and aufumn insects entirely out of its action. *E. autumnaria* one of the species relied on, Mr. Fenn had had considerable experience in breeding, and in the series he exhibited there were many paler and many darker than any shewn by Mr. Merrifield, and the larvæ and pupæ had been kept under usual conditions and the greater proportion of them followed the parent forms. In conclusion he said such variation as was shown by Mr. Merrifield was practically impossible in a state of nature unless it was the result of disease. Messrs. Weir, Adkin, Tugwell, Carrington, Dobson, Barrett and Tutt continued the discussion, the last named gentleman following Mr. Fenn in attributing the variation to disease, and that to a large extent it was caused by preventing the proper development and formation of the colouring pigment. He thought the action of temperature was indirect and produced variation by interfering with the normal development. Mr. Merrifield agreed with many of Mr. Fenn's observations and thought most of them were consistent with the results obtained in his experiments as reported by him. In any case there could be no doubt that in the species principally operated on by him, temperature applied in such moderation as not to effect the healthy appearance of the insect, produced with great uniformity conspicuous differences in colouring. There were other species in which no considerable effect was produced unless the temperature was so extreme as to cause a certain amount of crippling or imperfect development. The meeting closed with a vote of thanks to Mr. Merrifield, proposed by Mr. Fenn and seconded by Mr. Jenner Weir.—H. W. Barker, *Hon. Sec.*

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

Thursday, April 7th.—Exhibits, Lepidoptera:—Mr. Gates, a living specimen of *Hadena pisi.* Mr. Southey, a long and variable series of *Hybernia defoliaria* from Highgate Woods. Mr. Bacot. a series of *Hybernia progemmaria*, including var. *Ascata ;* also an asymmetrical form of *Arctia caja.* Mr. Clark, *Brephos parthenias*, and *Amphidasys prodromaria*, both from Epping Forest. Mr. Battley, ova, young larvæ and cocoon of *Liparis salicis.* Mr. Simes, a life history of *L. salicis*, and a variable series of *Hybernia leucophæaria.* Mr. Smith, a series of *Selenia illunaria*, showing considerable difference between the spring and summer forms. Mr. Gurney, a series of *Lithosia quadra* from the New Forest. Dr. Sequeira, a case of Rhopalocera from Central Africa. He pointed out the similarity of several of the species to our British representatives, one in particular very closely resembling *Polyommatus phlœas*, but having the tails to the hind wings longer. Mr. Milton, *Asthena blomeri* from Clevedon ; and in Coleoptera, *Lina longicollis* and *Grammoptera ruficornis.* Mr. Heasler, *Chilocorus similis*, *Bythinus curtisi* and *Agathidium varians.* Mr. Battley then read his paper on "The life history of *Liparis salicis*" giving his experience in breeding this insect from the egg. He pointed out that it usually pupates by spinning the leaves together, and rarely, if ever, forms its cocoon on the trunk of a tree as stated by Newman. Mr. Mera observed that the time of flight of this species was about midnight, but he had occasionally seen it on the wing at dusk. Mr. Burrows had found cocoons of this species formed upon the trunks of trees, but thought that the larvæ were compelled to spin in this way, as they had almost defoliated the trees. Mr. Simes called attention to the peculiar yellow blood of the species, and to the glands on the thorax. Messrs. Clark, Gates, Tremayne, Nicholson, and others also took part in the discussion, and a vote of thanks was accorded to Mr. Battley for his paper. Mr. Riches stated that recently he had seen a freshly emerged specimen of *Spilosoma menthastri.* Mr. Southey recorded the breeding of *Biston hirtaria* from pupæ that had gone over two winters. A discussion also took place with regard to the occurrence of *Gonepteryx rhamni* near London; Wimbledon Common and Highgate Woods were mentioned as good localities for the species.

Thursday, April 21st.—Exhibits:—Five specimens of *Tæniocampa instabilis* from various localities in the north of London, two being of a very light colour. Mr. Huckett, two examples of *Selenia illustraria* bred from larvæ taken last autumn; he stated that the imagines bred from these larvæ closely approached the aestival form. Mr. Tremayne, *Cidaria miata*, *Amphidasys prodromaria* from Epping Forest, *C. flavicornis* and *Dasychira pudibunda.* Mr. Clark, a series of *Dasystoma salicella* from Epping Forest. Mr. Hill, a ♀ specimen of *Dasychira pudibunda*, quite freshly emerged, having a large area in each wing denuded of scales, these areas were strikingly symmetrical on either side of the insect. Mr. Smith, *C. flavicornis* and *Tephrosia crepuscularia* from West Wickham. Mr. Southey, a series of *Crocallis elinguaria* and *Ennomos angularia* from Hampstead, one ♂ of the latter species having the tips of the anterior wings suffused with purple. Mr. Battley advised those members possessing any ribbon-grass in their gardens to search for the larvæ of *Apamea ophiogramma* now, he also added that during February these larvæ had wandered from the ribbon grass and attacked carnations. Coleoptera—Mr. Heasler, *Cnemidotus impressa*, *Hydroporus erythrocephala*, *Philydrus melanocephalus* and *Berosus signaticollis* from Mitcham.—A. U. Battley and J. A. Simes, *Hon. Secs.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.

April 11th.—The President, S. J. Capper, F.L.S., F.E.S., in the chair. Messrs. W. Webster, of St. Helens; C. F. Johnson, of Stockport; aud the Rev. C. Buckmaster, of Wigan, were elected members. Mr. J. E. Robson, F.E.S., of Hartlepool, Editor of the "*British Naturalist*," read a paper entitled "Melanism and the theories explaining it." After reviewing the various theories of previous writers for the tendency of certain species to darken, he stated that it was his belief that no single theory could account for the phenomena of melanism now going on, and while agreeing with Lord Walsingham that the dark colour of insects in cold, and snowy regions, was due to that colour being most advantages for absorbing heat, he also considered that the increase of smoke and dirt, obscuring the suns rays near large manufacturing towns, would also tend to produce melanism by the law of natural selection. The paper was illustrated by numerous examples of melanic forms of Lepidoptera and Coleoptera. Mr. C. A. Briggs' very dark *Sphinx ligustri*, the President's black *Boarmia cinctaria* and *B. roboraria* and Mr. Robson's very dark *Chortobius pamphilus*, *Arctia menthastri* and *Odontopera bidentata* being especially fine, but the little box that attracted most attention contained side by side, Mr. Briggs' fine variety of *Arctia caja* with faint buff coloured markings on the fore wings with black *Bicolor*-like spots occupying the centre, the hindwings being all red; and Mr. Capper's variety of the same species, the forewings of which are immaculate with the exception of one black spot near the centre, the hind wings being normal. Mr. Newstead exhibited types of *Prosopophora dendrobii* Doug. of M.S. only; a very remarkable coccid from Demerara, descriptions of which will shortly appear in the E M M. Mr. Collins on behalf of Messrs. C. R. Billups and J. Dutton of Warrington, ♂ and ♀ of *Dytiscus dimidiatus* captured in the fens in 1891 after being lost sight of for eight years, and *Silpha atrata* var. *subrotundata* from the east and south-west coast of the Isle of Man, Feb., 1892. Mr. Sharp, melanic vars. of *Calathus nubigena*. &c.; Mr. Scowcroft, fine varieties of *Argynnis aglaia*; Mr. Pierce, *Macaria liturata* a black form with a broad marginal orange band to both wings:—F. N Pierce, *Hon. Sec.*, 143, Smithdown Lane, Liverpool.

General Notes.

NOCTUA CONFLUA.—My attention has only just been attracted by the unnecessarily warm controversy about *Noctua conflua*. I must, in the first place, confess that I wrote very carelessly, when, in my list of captures in Iceland, I said that *N. conflua* was first described from Iceland specimens, and I regret that this statement should have led anyone wrong. I was referring to Dr. Staudinger's paper in the "Stett. Ent. Zeitung," for 1857, when, for the first time he described the different forms of *N. conflua*, from the examination of more than 1000 specimens. At the same time I attributed the name to Trietschke, who wrote 30 years before Staudinger. His description, or rather that of Duponchel, which seems to have been published before that of Trietschke himself, was founded on the examination of 16 specimens from the Riesengebiege, while in no way differentiating it from *N. festiva*, would exclude the majority of the Iceland specimens, and his figure does not help matters much. Now the Icelandic and Wolsingham specimens are very much alike, and larvæ of this latter sent to me by Mr. Sang as those of *N. conflua* produced this form, and differ from any of the Shetland specimens which I have seen. Like the latter, the wing is much more truncate than in the ordinary *festiva*, but there is an additional distinction in the relative shortness of the wing. In Iceland I found the size and proportions of the wings to be very constant, the markings themselves run through much the same variations as those of *N. festiva*, and I cannot but think that all the specimens, whether coming from England, Scotland, Shetland, or Iceland, must be referred to one protean species, viz:—*N. festiva.*—PHILIP B. MASON, Burton-on-Trent.

NOCTUA FESTIVA AND VAR. CONFLUA.—Since the discussion on this subject was started, it appears to me that the original lines of argument have been somewhat departed from; if I am not wrong the "bone of contention" between Mr. Tutt and Mr. South was the somewhat *tough* and *marrowless* one of nomenclature, as to whether, when Treitschke founded the name *conflua*, he had before him and intended it for the small Scotch specimens (Newman's *conflua*), or the much more distinct and constant brown one from Shetland, recently dubbed var. *thules*. From what I gather I should certainly think the latter. Newman was undoubtedly at the bottom of much of the confusion, in establishing the small Scotch race as a distinct species under the name of *conflua*; except the difference of size, these are in no way different to ordinary *festiva*, unless, indeed, that on the whole they are richer in colour, but they show exactly the same phases of variation as the normal sized ones, The brown Shetland ones certainly look to have narrower wings and are fairly constant, and like no other form of *festiva*. As I said above, the argument has drifted from nomenclature to a question of whether, what I will allude to as the Shetland var. *conflua*, is a species, sub-species, or variety. Mr. Hewitt (ante p. 77) says, when speaking of the Shetland var. *conflua*, "which Mr. Tutt wishes to establish as a species." I don't think Mr. Tutt wishes to do anything of the sort; in his "British Noctuæ," Vol. II., p. 122, he certainly treats it as a *sub*-species, but surely a sub-species comes nearer to being a variety than a distinct species, it depends so entirely on what we understand as a *sub-species* and *variety*. I quite believe that the term "*sub*-species," as applied to a local race of a species, in its turn having its own varieties, will, ere long, be very generally used, as the old feeling against describing and naming local races of a species wears away, as it must do with the growth of the present desire for studying variation. I cannot agree with Mr. Hewitt when he says "where Shetland forms of *festiva* and var. *conflua* are mixed up, I am sure it would be impossible for the most experienced entomologist to tell 't'other from which.'" No doubt other forms of *festiva* occur at Shetland, but if Mr. Hewitt has any *festiva from the mainland* he cannot separate from the true Shetland var. *conflua*, all I can say is that they must be true *conflua* also, and he has proved that it is to be taken on the mainland. For my part, I can say with Mr. Tutt, that I have seen no form of *festiva* from the mainland of Great Britain which could not easily be separated from the true *conflua* of Shetland. In conclusion, may I broach the delicate subject of the personalities which have crept into this discussion. We are used to such in newspapers of opposite politics, indeed, we look for it; no General Election would be complete without a good dose of it, but in a scientific discussion it seems most undesirable and out of place, and in no way conducive to a satisfactory solution of a subject for argument.—Wm. Farren, F.E.S., Cambridge.

Micro-Larvæ for the Month.—This is a busy month, and towards the end we shall find larvæ plentiful everywhere. The following are a few, out of the great number, that may now be taken: In the shoots of holly the larva of *G. nævana* is now to be taken commonly, and in those of maple, *D. forskaleana*; the shoots of the *Vaccinium* is also to be found drawn together by the larva of *G. geminana*; *H. cruciana* in sallow shoots; and boreing down the stems of *Chrysanthemum leucanthemum* the larva of *D. acuminetana* is now busy, causing them to drop; in the leaves of the same plant may now be found the larva of *Bucc. aurimaculella* eating away the parenchyma; in the topmost shoots of young Scotch firs the larva of *P. buoliana* is almost sure to be found, especially in open parts of woods, and in the shoots, particularly the ends of the lower branches of the older trees the larva of *R. pinicolana* will be found giving the shoots a withered appearance. Under the radical leaves of *Ballota nigra*, the fiddle-shaped cases of the larva of *N. schiffermillerella (fasciellus)* can now be taken where the imago occurs, the large holes in the leaves is a sure indication of their presence. The drooping shoots of the spindle (*Euonymus europæus*) remind us we can now take the larva of *Y. plumbellus*, and in the shoots of buckthorn (*Rhamnus catharticus*) having a similar appearance, the larva of *L. rhamniella* is giving them quite a brownish scorched appearance. By beating Oaks we can now obtain the larva of *H. radiatella*, and from Sycamore and Maple the larva of *H. sequella.* In the drawn together leaves of Carline thistle (*Carlina vulgaris*) the larva of *P. carlinella* is now to be seen in the neat little habitation it has formed, and the common hemlock (*Conium maculatum*) have at this time some of the leaves folded over by the larva of *Dep. alstœrmeriella* and *Weirella.* This is the best month for collecting all the leaf-feeding larvæ of that large family of case makers (the Coleophora), their characteristic manner of feeding being so very conspicuous on the fresh-looking and, in some instances, hardly expanded leaves. On the black Knapweed (*Centaurea nigra*) growing on sunny slopes, the long cases of the rare *Col. conspicuella* and the short ones of *C. alcyonpennella* are now to be taken, and in woods, on the *Stachys betonica* those of *C. Wockellia*, and along the sides of the main paths, where the *Guenista tinctoria* is to be found growing, the long curved cases of *C. vibicella* cannot fail to be observed, and in the shoots of the same plant the larva of *Gel. lentiginosella* will be found drawing them together. On Oaks the pistol-shaped cases of *C. palliatella* and *ibipennella* are now to be taken, and on hawthorn and pear leaves the long straight cases of *C. hemerobiella*, and on the stitchwort (*Stellaria holostea*) the straight cases of *C. solitariella* and, more rarely, the brownish cases of *C. olivaciella*, the flat serrated cases of *C. limosipennella* and the short straight cases of *C. nigricella* are now to be seen on the leaves of Elm, and *C. gryphipennella* on leaves of Rose, and many others of the same genus on other trees and plants. The Willow herb (*Epilobium augustifolium*) has its shoots drawn together at this time by the larva of *Lav. conturbatella*, and in the shoots of *Epilobium hirsutum* the larva of *L. fulvescens* may now be taken. The leaves of *Luzulu pilosa* in shady parts of woods are now being mined by the larva of *E. magnificella* and *trapiezella*, and the larva of *E. cinereopunctella* in the leaves of *Carex glauca*, in the leaves of dwarf sallows growing on heaths, the larva of that local *Lithocolletes quinqueguttella* is now to be seen feeding, and in those of Whortleberry the larva of *L. vacciniella*, in the leaves of *Aster tripolium* the larva of *Bucc. maritimella* is making their long serpentine galleries, and *Bucc. cristatella* will be found on leaves of Yarrow. The above, and numbers of others at this time, are only waiting the attentions of the assiduous worker.—G. Elisha, Shepherdess Walk, London.

Myrmica ruginodis making war on its own species.—Rambling near Clearbroak on the border of Dartmoor on the 10th instant I caught sight of *Myrmica ruginodis* carrying something that I could not at first well define. Standing quietly a few moments I saw many others loaded in the same manner, I captured one and to my surprise I found it was another of the same species it was carrying; I have no doubt a raid has been made on a smaller colony and the victorious party were conveying them off to strengthen their home. The prisoner was grasped by the throat, the abdomen turned over on the top of the head of the carrier. I have several times seen *Formica rufa* at the same business, this is the first time I have witnessed it with *ruginodis*.—G. C. Bignell, F.E.S., Stonehouse, *13th April, 1892.*

Vanessa Io.—The Peacock butterfly has appeared in this district in unusual abundance during the last few days. It has been almost as plentiful as the Small Tortoiseshell, which is a most unusual thing here.—W. Macmillan, Castle Cary, Somerset.

The Sallows in Donegal.—From all it appears to me that we are very deficient over here as to numbers of insects, and we certainly are as to numbers of species. I have just returned from the County of Donegal, where I have been sallow hunting from time to time with very poor success, except that in one place I found *T. rubricosa* abundant. It has, I believe, been regarded as rather scarce in Ireland. Mr. Birchall says, "County Wicklow, Mr. Bristowe," which is a sure sign that he never took it himself. I also took some curious pale varieties of *T. gothica*, and some nearly black *instabilis*, also some hibernated *Calocampa exoleta*, but nothing really good.—G. V. Hart, Dublin.

Sallows at Hartlepool.—Common things are very abundant this year at the sallows, but so far, better species have not appeared at all. In Hezleden Dene near the sea *T. gracilis*, was the most numerous, varying from the pale form (*pallida*, Steph.), to that much sprinkled with dark scales, which I suppose is the type=*Sparsus*, Haw.; next in number was *rubricosa*, then *gothica*, with odd specimens *stabilis* and *instabilis*. In a railway cutting not a mile away, *gothica* was the most plentiful and I got some fine varieties from pale grey to very dark grey brown, and from pale reddish brown to dark red-brown, with the *gothica* mark in every stage of developement; none however could be called *gothicina*, as the tendency here appears to be for the mark to be eliminated rather than changed in colour. Next to *gothica*, *rubricosa* was most numerous then *stabilis*, of *gracilis*. I only got four.—John E. Robson, Hartlepool.

THE SALLOWS AT CASTLE EDEN DENE.—Perhaps your readers may be interested to hear how the Castle Eden Sallows have produced this year. Two of us were over last Saturday and had a very good time of it. On the Saturday we walked along the coast to Horden Dene, about a mile north of Castle Eden. We found the sallows just right and moths swarming. They tumbled out on to the sheet by the dozen and in splendid condition. *Stabilis* was commonest, then came *gothica*, which was left severely alone, *instabilis* and *rubricosa* were also common. We netted some fine *Badiata*; one of quite different colour to the ordinary, being greyish and with the markings much blacker, After we finished we walked back to Castle Eden and worked the sallows there. The same species were all common, and we also got two *gracilis* and a solitary *cruda*. Sunday night produced two more *gracilis*, and swarms of *instabilis*, &c. Altogether we were well satisfied but shall not be content till *opima* turns up.—L. S. BRADY, Sunderland.

THE SALLOWS AT LIVERPOOL.—We have had rather good sport in Liverpool. *T. gracilis* has been plentiful, and *opima*, though scarce enough, seems to be regaining lost ground. *Lineolata* and *zonaria* have both been common at Wallasey. This is a novelty for *zonaria*, for it had disappeared for the last few years.—GEO. A. HARKER, Liverpool.

NYSSIA ZONARIA AT LIVERPOOL.—On Monday, 11th April, under the guidance of Mr. Gregson, and in company with Mr. C. A. Briggs, of London, and Mr. Newstead, of Chester, I had the pleasure of making the acquaintance of this exceedingly local and very pretty species. As the excursion had been looked forward to for some time, I was very anxious for success. I hoped to take a hundred or so of the insects that I might supply friends on my side of the island, and I would not have considered the day ill spent if six or seven hours had been taken in obtaining so many. After leaving the station we turned down a street that faded off at the bottom into sandhills, and before we were out of the paved portion Mr. Briggs saw the first specimen on a lamp post. But our guide hurried us on and would not allow us to pause till we reached what he called good ground. It was a secluded little nook of rather dirty-looking sandhills, with very little vegetation, and what there was being withered and disreputable looking. At the bottom sods had been laid for a tennis court, and in the few yards surrounding the grass we were to search for *zonaria*. This was soon done, we could scarcely move without treading on them; males drying their wings, females depositing their ova, crawling about, or sitting paired, there they were at every step. I picked up 12 fine males without moving my feet, which I mention to give an idea of their abundance. Many of the females were depositing ova in the heads of the Carline thistle, where they were placed with great regularity in the dried remains of the flowers. Mr. Briggs called my attention to a male, on the wing of which some ova were deposited. As the female is wingless, he suggested this might be an occasional means of extending the range of the species. In the morning the males are torpid, except those just emerging, but in the evening they are lively enough. They were so abundant that in about an hour we were all satisfied. Mr. Newstead indeed was very soon done with them, and gave attention to the Bees, concerning which he may have an announcement to make which I will not forestal.—JOHN E. ROBSON, Hartlepool.

SPONGE-LIKE FUNGUS.—Mr. McMillan, of Castle Cary, sends a piece of fungus to be named, much resembling a fine sponge. Mr. Soutter to whom we have submitted the specimen writes, "Although at a distance from all my books, I have no hesitation in pronouncing it to be Dry Rot, *Meralius lacrymanas.* It is most variable in its appearance, and I need not say very destructive in its ravages.

Mollusca.

NOTES ON VARIETIES.—In this and the following articles I intend to quote opinions and facts bearing on the causes of variation, from various writers. I have before me a pamphlet by Prof. Wetherby, of the University of Cincinnati, treating principally of *Helix (Triodopsis) appressa*, Say. He speaks of a variety which occurs in the southern part of Kentucky, smaller than the type, thinner, and very heavily ribbed; of this variety he collected 129 examples, of which 43, exactly one-third, were deformed. These *Helices* were collected at the base of a mountain, on a talus of loose stones, liable to much shifting, and conseqnently certain to inflict much injury on numbers of the *Mollusca* inhabiting the place, in fact, the greater number of distortions were clearly traceable to the breaking and repairing of shells at different periods of their growth. After a somewhat detailed description of the accidental deformities, and their results in young examples, such as prominence and depression of spire, &c., comes the following, which I give in the author's own words:—"While accidental morphological characteristics are not likely to be perpetuated; and while general analogy stands in the way of the suggestion, the character of hermaphroditism, and the mutual fecundation of individuals abnormally alike, may present to such as choose to investigate the subject further, a key to some of the mountain molluscan fauna. At all events, *we have numbers of specimens,* *entirely uninjured, exhibiting slight modifications of the characteristic deformities described above*,* and the constant repetiton of accident renders the likelihood that its results will be persistently reproduced, much more probable than in the accidental cases of deformity which we observe under ordinary circumstances." The Rev. S. Spencer Pearce has written a paper on *H. caperata*, of which I shall give an abstract. The author remarks that we have to deal with "*Variations* of *Size*, of *Markings* or *Colouring*, of *Form* or *Shape*." . . "With regare to the *variations in size*, we have as the extreme of largeness the var. *major*, while the extreme towards smallness . . . would have to be characterised as a var. *minor*." "Judging from the fact that the larger forms of *Helix caperata*, as also those of *Helix virgata* are found on arable ground, especially in the borders of cultivated fields in limestone districts, size would seem to depend only on the combined presence both of an abundance of food-plants such as are supplied in the cultivated field, with a calcareous soil. Proper herbage, apart from the calcareous earth, and *vice-versa*, the calcareous soil without the richer food-plants, will not suffice to increase the shells in size." The writer omits any reference to climate which I think should always be considered a factor, a suitably warm temperature aided by a free supply of moisture would, I believe, be found necessary for the developement of these shells to any extent beyond the usual size. As the writer however is dealing with the County of Sussex, the presence of these climatic conditions are not doubtful. The author next states his opinion as to the origin of the two varieties of *form* which he has observed, the one a compact form with a raised spire and banded, the other, a mottled form, with a flattened spire and a wider umbilicus (var. *gigaxii*). The writer states that the latter is found in the borders of fields, while the former keeps entirely to open downs and pastures, and uncultivated places. The reason of this is believed to be that in tilled fields the flatter shell is of more use, enabling the snail to crawl with house low down close under the matted leaves, where it leads a sluggish life, rarely, if ever seeking to climb. On the turf and grass, on the contrary, a more compact, smaller and handier shell is required that the animal may the more easily manœuvre up and down, in and out among the blades of grass. The writer remarks that the flattened and mottled form is almost universal in those localities where sheep never feed, the banded form (var. *ornata*) occurring very rarely, while on the sheep pastures (commons, &c.) he finds *ornata* almost equally abunbant with the other form; this he accounts for by supposing that the sheep find the snails an unpleasant addition to their ordinary food, and further that the more conspicuous banded shells are easily avoided, while the less easily seen mottled shells are devoured with the grass. It is evidently assumed that the varieties breed true, at least to some extent, although no statement of this kind is made. These remarks are followed up by the suggestion that *H. caperata* had originally a uniformly brown shell. "We can imagine that the developement which the colouring and marking have passed through represent to us a gradual change, through mottled forms, from an original form which had an uniformly brown shell. which tends, owing to the surroundings of an arid, open, and sunny habitat, to a uniform whitish or white shell, which we know is the prevailing characteristic colour of species living in dry and sunburnt countries." "The variety *ornata* being really an aside form, so to speak, prominent only on the sheep pastures, arises from the causes previously explained." It is further suggested that the typical forms of *H, virgata*, *H. ericitorum*, the var. *bizona* of *H. acuta*, and kindred form of continental *Helices* may owe their prevalence to a like cause. The geneology of the colour varieties of *H. caperata* is summed up as follows. 1. The brown shell: now perhaps represented by the var. *fulva*, a reversion to the type from No. 2 or No. 3. 2. Form with paler shades on brown shell 3. Ordinary mottled form and derivative forms, in which these mottlings tend to produce bands (var. *ornata*.) 4. Forms in which dark mottlings are disappearing. 5. Form from which mottlings and bands have disappeared (var. *albicans*). Produced from No. 4, and also from the var. *ornata*. No. 3. These forms in which the dark mottling or banding is replaced by translucent markings may be explained by the failure of the animal material, which is the basis of the colouring matter of the shell.—W. A. Gain, Tuxford.

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* The Italics are mine.

THE PTEROPHORINA OF BRITAIN,

BY J. W. TUTT, F.E.S.

(Continued from page 63).

striking as in my series of *Platyptilia gonodactyla*, also from various English localities. *Mimæseoptilus plagiodactylus* I have bred from larvæ feeding on, and partly in, the shoots of *Scabiosa*. These were sent me by Mr. Purdey, of Folkestone. Previous to this Mr. Gregson had been good enough to send me larvæ of *plagiodactylus*, or as he named it *scabiodactylus*. In his note accompanying the larvæ, Mr. Gregson wrote :—' You will see how distinct it is from *plagiodactylus* of our list, which has a larva having a broad claret dorsal line.' The body-colour and ornamentation of Mr. Gregson's larvæ may be briefly described thus :—Whitish-green, dorsal stripe reddish-pink (or rosemadder), most distinct on the 9th to 12th segments. Comparing the Folkestone larvæ with the full description taken from those sent me by Mr. Gregson, I found that they agreed in every particular. I admit that the perfect insects bred from Mr. Gregson's larvæ are more strongly marked, and perhaps smaller, than imagines from the Folkestone larvæ; but as the forms are so identical in their early stages I could not agree with Mr. Gregson as to the distinctness of his insect" ("Entomologist," Vol. XXIII., p. 98). Having thus settled in his own mind that *bipunctidactyla* and *plagiodactylus* were the same species and that *scabiodactylus* was simply a local form of the former, it is amusing, though unsatisfactory, to find Mr. South in the November number of the "Entom.," *i.e.*, some six months after, redescribing the larva and figuring the species as *plagiodactylus*, without any reference to the correct name *bipunctidactyla*. Mr. Gregson's original note, on the probability of the form with the inner margin ochreous being distinct, is as follows:—"At page 186 of the "Entomologist" for December, 1866, appears a life-history of *Pterophorus plagiodactylus*, written by myself, but, as subsequent discoveries of "plume" larvæ have confirmed me in the opinion that the species there described is not the *plagiodactylus* of our Continental friends, their *plagiodactylus* having a perfectly distinct larva from the species I discovered feeding upon *Scabiosa columbaria*, I have given it the name of *scabiodactylus*. I have long suspected the *bipunctidactyla*, Haw. of the older English cabinets, was identical with or very nearly allied to the *plagiodactylus* of Continental collections. A little care in that direction will, I think, prove that we have also another nearly-allied species in that group,—larger, stronger and darker, and sitting with its wings slightly deflexed, and the hind legs carried straight out in repose. This supposed species stands in my collection as *P. hirundodactylus*. I have made figures of a plume-larva which I discovered, where I took the perfect insect: the larva is distinct from any species I know, but as I did not breed the perfect insect the matter must remain an enigma" ("Entomologist," IV., pp. 363-364). I believe *hirundodactylus* never got further than this, and *scabiodactylus* and *plagiodactylus* are now merged into *bipunctydactyla* as varieties.

LARVA—The larva was first described by Mr. Gregson as that of *plagiodactylus* ("Entomologist," III., p. 186). He writes:—"The larva feeds on *Scabiosa columbaria* in April and in May, eating down into the heart of the plant before its flowering-stem is thrown up, and thus utterly destroying it; it is of a light green colour, hairy, and gradually attenuated from the head to the anal extremity" ("Entomologist," Vol. III., p, 186). This he afterwards referred to ("Entom.," IV., p. 363) as the description of the larva of a "plume"

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TO CORRESPONDENTS.

By reducing the leads between the lines, space equal to nearly three additional pages has been gained, without giving the Magazine the crowded appearance that is so painful to read.

A plate, illustrating the "Hand-book of British Spiders," is issued this month, instead of the usual portrait. The series will be resumed next month when a portrait of J. W. Douglas, F.E.S., will be given.

A description of Plate V., issued in September last, appears this month. The description of Plate VI. will appear with the next "Spider" supplement.

Arrangements are now completed for continuing the Molluscan Section. W. A. Gain, Esq., of Tuxford, Newark, has kindly undertaken the Land and Fresh Water Mollusca, and Brocton Tomlin, Esq., of The Green, Llandaff, will attend to the Marine Section. Communications may be made to either of these gentlemen. All letters requiring a reply by post should contain stamp.

The Section for Coleoptera is conducted by G. A. Lewcock, Esq., 73, Oxford Road, Islington, to whom also direct communication may be made.

Mr. Lewcock also represents the Magazine in London, and will receive subscriptions, papers, and notes for publication, &c., &c.

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new to science under the name of *scabiodactylus*. Mr. C. G. Barrett then found larvæ and these were described by Mr. Buckler. Mr. Barrett writes ("E.M.M.", VIII., 156):—"On May 30th last, I went over to my favourite chalk-pit, determined, if possible, to make the acquaintance of the larva of *Pterophorus plagiodactylus*. The sloping banks of the pit are covered with a profusion of wild flowers, and among them *Scabiosa columbaria* and *arvensis* grow in abundance. At this time, these plants were throwing up strong shoots, and growing so rapidly, that the infested portions of the plant were almost directly covered, and concealed by the healthy shoots, so that I had no little difficulty in discovering the whereabouts of the larva. The mode of life is this:—The larva gnaws a hole in the side of a young shoot, and, working up, devours its anterior substance, proceeding from shoot to shoot till full-fed, when it attaches itself to the plant by the anal segment, and becomes an angular, bright green pupa, beautifully edged and pointed off with pink, and entirely without hairs. The favourite food-plant is *Scabiosa columbaria*, but *S. arvensis* serves as a substitute, and in the "fens" the moth is common among *S. succisa*. This species is double-brooded, appearing in May and June, and again in August, the larva feeding in May and doubtless again in July, but in the latter case the mode of feeding has still to be observed, as the plants are then well grown;" whilst Mr. Buckler's description which immediately follows is:—"The larva of *plagiodactylus*, when full-grown, is about five lines in length, of moderate proportion, neither stout nor slender, tolerably cylindrical, tapering a little posteriorly; the head rounded and rather smaller than the second segment, of a very pale colour and shining; the body is very pale olive-yellow, with a conspicuous brown dorsal line attenuated at each end, and with two faint lines along the side a little deeper than the tint of the ground colour; on the lowest line are the black spiracles each on a slight swelling; the tubercular warts are of the pale ground colour and furnished with rather long curved whitish hairs; the head and other parts of the body emit short hairs" ("Ent. Mo. Mag.," Vol. VIII., p. 156). Concerning the habits of the larva of the second brood, Miss Kimber writes:—"I found the larvæ of *M. bipunctidactyla* feeding on the flowers of scabious. They are very sluggish, and eat through the bases of several florets. They are thus completely hidden, and, until the flower head is pulled apart there is no sign of the larva within" ("Ent. Record" &c., Vol. I., p. 264). Mr. Porritt writes:—"A larva which has baffled all my attempts to find it, is that of *Pterophorus bipunctidactylus*. The imago abounds among *Scabiosa* in some old rough fields here, and is on the wing continuously from June until October. Mr. W. Warren informs me he finds the larvæ of the early summer moths feeding in the autumn, in the *flowers of Scabiosa*, on sunny afternoons some of the larvæ coming outside the flowers, and being exposed should of course then be easily seen. And Mr. C. Barrett, if I remember, rightly told me he had found the larva of the later moths feeding in the *stems* of *Scabiosa*, before the time for the flowers to appear; but although I have searched season after season, at all the parts of the year from May to September, and Mr. S. L. Mosley of this town has also worked diligently at different times of the year for it, neither of us have ever been able to detect a trace of the larva in any part of the plant" ("Ent. Mo. Mag.," Vol. XXI., p. 208).

PUPA—The pupa was first described by Mr. Gregson who writes :—"The pupa is slender with green wing-cases and a pinkish body; it is suspended by the tail, either from its food-plant or from any blade of grass or other object it may find in the neighbourhood. In this state it remains fifteen days when the perfect insect appears" ("Entomologist," III., p. 186). Mr. South further adds :—"Pale green, with an obscure reddish pink dorsal line or stripe, which in some examples is only represented by short dashes behind the thorax, and on the last four segments. The anal segment and tip of leg-cases pale pinkish; sometimes the whole of the dorsal area is also suffused with pinkish. Wing-cases tinged with yellowish. Leg-cases detached from abdomen. Suspended by anal attachment from a leaf or stem of food-plant. April, May and June" ("Entomologist," Vol. XVIII., p. 274).

HABITAT—It seems difficult to find a locality that this species does not affect if any species of *Scabiosa* be found. I have taken it myself in marshy meadows, woods, on roadsides, on inland chalk hills and on chalk cliffs facing the sea. Mr. C. G. Barrett says :—"The insect *(plagiodactylus)* is common in chalky places among *Scabiosa columbaria*, sometimes swarming about disused chalk-pits," whilst again he says that "we find *bipunctidactylus* scattered all over the country almost wherever *S. succisa* grows." He also records it from "Ranworth Fen on a patch of very luxuriant *S. succisa*," at "Brandon among *S. columbaria* and *S. arvensis*" ("Ent. Mo. Mag.," Vol XVIII., p. 179). Mr. Gregson records a form under the name of *aridus* from Wales, in the same Magazine, Vol. VII., p. 88, whilst Mr. Porritt on p. 63 of the same volumn records "*plagiodactylus* from Witherslack," and Mr. C. G. Barrett in Vol. XXIV., p. 396 records it from "near Swaffham." I have taken it abundantly at Strood Cuxton, Deal, Folkestone and other Kent localities, at Freshwater, in the Isle of Wight, near Wicken Fen, and many other places. Mr. Atmore records it from "King's Lynn in Norfolk" ("Ent. Record," &c., Vol. II., p. 285), and it is mentioned in the list of the "Lepidoptera of Burton-on-Trent." It occurs in Cork, Dublin and

Cavan, whilst Mr. Reid has bred it in Aberdeenshire. It also occurs at Garelochhead and Glasgow *(in litt.)*. Writing of the habitat of the Welsh form Mr. Gregson says:—"The plant destroyed by this insect grows on ground where only sheep and goats can travel on the ledges of the rocks, and were it not kept in check by the larvæ, would soon cover the ground with a plant I have never seen eaten by any animal" ("Entomologist," Vol. III., p. 186). Staudinger and Wocke give the range of *plagiodoctylus* as "Alps; Germany (South); Gaul; Hungarian Mts," and of *serotinus* as "Central and Northern Europe (except polar region); Castilia; Naxos" ("Catalog," p. 343).

Time of Appearance, &c.—I have found this species fairly abundant in the first week of June, and more rarely during the second week of the same month. I have never met with it during the time that elapses between this and the last week in July when it begins to become common again, becoming, generally, most abundant about the second week in August, although I have found it until the first week in September. Relating to the time of appearance of this species Mr. Porritt writes:—"What a long time this species continues on the wing! In an old rough field, overgrown with *Scabiosa*, adjoining Lepton Great Wood, near here, I have taken it this year continually from June 12th until to-day, October 14th. In July it was in great abundance, and has gradually decreased in numbers since. I only took it in fine condition early in the season, or should have thought the late specimens belonged to a second brood" ("Entom." XV., p. 262). Although this was the experience of Mr. Porritt, I believe in our more southern English localities the species is always distinctly double-brooded, thus differing from its ally *zophodactylus*, which continues to emerge from July to October. The species may be disturbed from the herbage during the day but it flies actively just before dusk. Stainton in the "Manual" gives "July" for *bipuntidactylus*, and "June and July" for *plagiodactylus*.

Mimœseoptilus zophodactylus, Dup.—This species although similar to the last is readily recognised by its white costa.

Synonymy—*Zophodactylus*, Dup. XI., p. 618; 114, 4; *Loewii*, Zell. "Isis," 1847, 38 and 904, "Linn. Ent. Zeit.", VI., 364; H.-S., V., p. 375; Sta. "Man." II., p. 442; Tutt "Ent." XXII., pp. 104-105. Var. *hodgkinsoni*, Greg. "E.M.M.," IV., pp. 178-179. There appears to have been little doubt about the synonymy of this species, due perhaps to the small amount of variability it exhibits. The species was for many years known in Britain as *loewii* but is now generally called by its correct name *zophodactylus*. Mr. Barrett says:—"*M. loewii* seems to be correctly changed to *zophodactylus*, Dup. I am quite of Dr. Jordan's opinion that *hodgkinsoni* is merely a slight variation of this species" ("Ent. Mo. Mag.," XVIII., p. 180).

Imago—Anterior wings rather pointed at the apex, divided into two lobes, of a dark grey colour with a slight violet tinge in fresh specimens; a black dot near the centre of the wing, another at the extremity of the fissure. The most important character is the white costal edging, especially distinct towards the apex. Hind wings divided into three plumules, dark grey-brown in colour. Stainton's diagnosis is:—"*P. loewii*, 9'''. Closely allied to the preceding (*bipunctidactyla*), but f.-w. greyer, and the costal cilia white from the middle of the wing to the tip" ("Manual," II., p. 442). Duponchel's typical description is:—"The forewings are of an obscure blackish-brown with an oblong blackish spot at the termination of the cleft which divides the forewings into two parts. This cleft is fairly large and extends almost a third of the length of the wing. Of the three plumules of which the hind wings are composed, the two upper ones are spatuliform, the third linear. The fringes of the forewings are whitish, those of the hind wings brownish. This species, which does not appear in Hübner or Treitschke, was given to us by M. Méret, the specimens having been captured in the Eastern Pyrenees" ("Histoire Naturelle," etc., Vol. XI., p. 618). The figure is really much more satisfactory than the description and shows up the characters of the species well (*l. c.*, Pl. 114, fig. 4).

Variation—This species varies very little in the imago state but Mr. Gregson described and wrote the following notes on a variety which he named *hodgkinsoni*:—"Alar expanse 7 to 8 lines. Head, face, thorax, body and legs light creamy ashy-grey, lightest towards the cleft; very slightly irrorated with darker atoms; the discoidal and cleft spots scarcely perceptible. Under-wings rather darker than upper-wings. *Pt. hodgkinsoni* differs from *Pt. loewii* to which it is nearly allied, in the general colour being lighter, in the less irrorated or suffused appearance, its lesser size, and in its want of the light canary-coloured terminal costal edging to the tip, and also in its time of appearance: from *Pt. plagiodactylus* in its smaller size, much lighter colour, the entire want of the bright buff and light ashy-white upon the thorax and body, the absence of the dark blotches so conspicuous upon good specimens of that species, the absence of any light edging to the cleft and in being devoid of any light colour upon the terminal joints of the legs. From *Pt. bipunctidactylus* in its smaller size, more yellowish-ashy colour and lighter coloured legs, and from the spurs being of the same colour as the legs, whereas in *bipunctidactylus* the spurs are lighter than the legs. While in company with my friend J. B. Hodgkinson, this species was first discovered in a small pasture-field at Witherslack, on the road from the inn to the Moss, early in June, about the year 1860. Subsequently Mr. Hodgkinson met with three specimens on the "Juniper field," one of which he kindly gave to me to make my pair, one he has presented to Mr. Doubleday and one went to Mr. Burney. Since then he has taken one or two more specimens, and these are all I know of. That the species is nearly allied to *Pt. loewii* is self-evident; indeed none but a practised eye would detect the differences; but this may be also said of other species in this very peculiar group; wherein larvæ, without the most remote apparent relationship in form, markings, or habits, produce entomological puzzles" ("Entomologist's Monthly Magazine," Vol. IV., pp. 178-179). Mr. Barrett's opinion in the same Magazine, Vol. XVIII., p. 180, that he "thought *hodgkinsoni* merely a slight variety of *zophodactylus*," brought forth the following reply from Mr. Hodgkinson:—"I see my "plume" is threatened with extinction. Has anyone seen the original *hodgkinsoni* that I took? I fancy Mr. Gregson could give a good account of it, he has a good drawing of it and I rather think a specimen; the late Henry Doubleday also wrote to me that I had sent him a new "plume" and a new *Tortrix*, the "plume" was *hodgkinsoni*—the *Tortrix*, *Euchromia rufana.* A little more information may not be out of place. I never either saw or heard tell of a *loewii* being taken nearer than Southport, quite 50 miles away, and a sea between; another thing, the plant (centaury) does not occur within miles of where I took the insect" ("Entomologist's Monthly Magazine," Vol. XVIII., p. 212.) Mr. South differs from other writers on the position of this variety, and says:—"Although not so stated, I apprehend that the ashy-grey, lightest towards the cleft," &c., refers to the primaries; if this is so, I have some specimens of *M. bipunctidactyla* from N. Devon which agree very well with the description of *hodgkinsoni.* The time of year fits my insect also, and it differs from the type in precisely the same manner that *hodgkinsoni* is said to differ from *M. bipunctidactyla.* As I have not yet seen a specimen of *hodgkinsoni*, I cannot, of course, say that it is a form of *bipunctidacyla*, but I think it may turn out to be a form of that species, rather than a var. of *zophodactylus*, Dup." ("Entomologist," XXII., p. 35). Needless to say that no one who has seen the specimens agrees with Mr. South.

(To be continued).

THE SECONDARY SEXUAL CHARACTERS OF THE BRITISH COLEOPTERA.

BY JOHN W. ELLIS, M.B. (VIC.), F.E.S.

(Continued from page 94).

Colour.—Colour does not play an important part in the distinction between the sexes of British beetles, and in the comparatively few and isolated instances where a difference in colour is observable in the sexes this difference is most often confined to a portion only of the upper or under surface of the insect. Perhaps the nearest approach to complete unlikeness in colour is presented by *Osphya bipunctata*, in which the male is black, with the edge of the thorax, the base of the antennæ, and the legs (mostly) reddish, while the female is yellow-brown, with the top of the head, two spots on the thorax, and the tip of the elytra black. In *Hoplia philanthus* the upper surface of the male is dark and covered with ashy scales, and the legs and antennæ are black, while the upper surface of the female is reddish, with greenish scales, and red legs and antennæ. In some of the *Harpali*, already alluded to, the male has the upper surface shining blue, green, or blue-black, while the female is dull black, without any metallic reflection. The male *Donacia affinis* is black with a violet reflection, while the female is bronze or brassy. In one of the water-beetles, *Rhantus notatus*, the under surface of the male is mostly black, while that of the female is pale yellow slightly spotted with black. The male *Scymnus discoideus* has the head and thorax reddish-yellow, with a black spot at the base of the latter; that of *S. frontalis* has a yellow head and a spot of the same colour in each anterior angle of the thorax; the females of both the species are entirely black. The genus *Cryptocephalus* contains a few species which present sexual differences in the colour of the head: *C. bilineatus* has the head, in the male, yellow, with a black line down the centre, while that of the female has the head black, with two yellow spots between the eyes; in the male of *C. moræi* the front of the thorax and a x shaped mark on the forehead are yellow, the remainder of these portions being black, while in the female the thorax is entirely black, and the head is black with two yellow lines between the eyes. The male of the common tiger-beetle (*Cicindela campestris*) has the mandibles creamy white, only the extreme tip being black, while in all the females, including a large number of specimens from the Pyrenees as well as British, that I have been able to examine, the basal third, and sometimes less than this, is white, the remainder being black. The antennæ and legs of the male *Strangalia aurulenta* are mostly black, while these portions in the female are usually red-yellow. The male of *Apion difforme* has the antennæ entirely yellow-brown; the female has the antennæ entirely black. *A. craccæ* and *annulipes* have the antennæ entirely yellow-red in the male, the base only is of this colour in the other sex; while in *A. dissimile* and *subulatum*, where the basal joint of the antennæ is red or yellow in the male, these organs are entirely black in the female. Two species of the same genus, *A. rufirostre* and *nigritarse*, and *Balaninus pyrrhoceras* have the apical half of the male rostrum bright red, while in the females of these species the rostrum is entirely black.

The male *Sericosoma brunnea* has the thorax entirely black ; that of the female has a dark patch in the middle. The male *Tillus elongatus* has the thorax black, that of the female is bright red with the exception of the front margin. *Cryptocephalus coryli* has the thorax entirely black in the male, bright red in the female. *Adimonia sanguinea* has the thorax and elytra red with black markings and the legs mostly black in the male, while in the other sex the legs are red and the thorax and elytra are without spots. The male *Campylus linearis* has the elytra pale yellow with or without a dark suture, the female has this portion of the body black, with a yellow outer border. The male *Metœcus paradoxus* has the elytra almost entirely yellow, while in the female these portions of the body are nearly or quite black. Two of the longicorn beetles have the elytra yellow in the males (with the apex and outer margin black in *Leptura sanguinolenta*, with the apex and suture black in *Strangalia melanura*) while the females of these species have the yellow replaced by bright red ; the elytra of the male *Apion lævigatum* are black, those of the female deep violet ; those of *Apion sorbi* are brassy-black in the male, and greenish-blue in the female. Canon Fowler notices the presence of a small black spot near the suture of the elytra in the female *Cicindela campestris* which is absent in the male—a mark which very much reminds one of the minute white spot present in the red band on the forewing of the female red admiral butterfly, and which also is never found in the other sex. The small brachelytrous *Anthobium sorbi* and *torquatum* have the abdomen—or that portion of it which is uncovered by the elytra—black in the male, red or red-brown in the female. The very rare (British) *Oxytherea stictica* has the first four segments of the abdomen marked beneath with a row of white spots in the male, which are absent in the female. The female only of *Strangalia armata* has the basal abdonimal segments marked with yellow ; and the male only of *Apion rufirostie* has the apex of the abdomen red.

(To be continued.)

LIST OF LEPIDOPTERA OF ABERDEENSHIRE AND KINCARDINESHIRE

BY WM. REID, PITCAPLE.

(Continued from page 96.)

Nonagria lutosa.—Recorded from Fyvie.

Nonagria fulva.—Very common on Moors, and waste ground, varies from pale whiteish, through every shade of brown, to almost black.

Dasypolia templi.—Not uncommon, larvæ abundant, but nearly always stung, ♀'s are often met with in the spring.

Gortyna flavago.—Once at Banchory and Old Aberdeen, (Trail).

Hydræcia nictitans.—Common on ragwort, very variable.

var. paludis, Tutt. Have taken one or two.

Hydræcia micacea.—Common, very variable, have one as dark as *petasitis* in colour.

Axylia putris.—Rare, Peterhead (Rev. I. Yuill) Mr. Tait has taken it near Inverurie.

Xylophasia rurea.—Dark and light varieties both abundant, intermediate forms rarer.

Xylophasia tollikoferi.—One taken at Keithall near Inverurie, is now in Mr. Tait's possession. (S. N. Vol. I., pp. 267, 268, and Ento. XXII., pp. 96, 97).

Xylophasia lithoxylea.—Not rare at treacle on the coast.

Xylophasia polyodon.—Excessively abundant, black, or nearly black, specimens are often taken.

Dipterygia pinastri.—Very rare near Peterhead (Rev. I. Yuill) recorded by Professor Trail in Lep. of Dee.

Charæas graminis.—Common on ragwort, variable, young larvæ common, feeding and resting at the tips of grass in June.

Cerigo cytherea.—Not rare at Collieston, (Horne).

Luperina testacea—Abundant on the coast, rarer inland; fond of flowers and treacle, also comes to light.

Mamestra anceps.—Scarce, (Horne).

Mamestra albicolon.—Very scarce, (Horne).

Mamestra furva.—Widely distributed, but rather scarce, more common on the Kincardine coast than anywhere else. Comes to ragwort.

Mamestra brassicæ.—Generally common, very uncertain in its appearance, sometimes one of our rarest species.

Apamea basilinea.—Common and variable.

Apamea gemina.—Often abundant, sometimes rather scarce.

var. remissa.—Rare.

Apamea unanimis.—Very rare near Inverurie, (Tait).

Apamea fibrosa.—Rare, Fyvie, and near Pitcaple, ours are all the dark variety, with pure white spot.

Apamea oculea.—Abundant, variable.

Miana strigilis.—Appears single, very rare.

Miana fasciuncula.—Abundant at treacle and ragwort.

var. cana.—Very common. Mr. Horne has lately taken an intermediate form (near Colbiston I believe) which resembles Irish *strigilis*.

Miana literosa.—Common at ragwort.

Miana arcuosa.—Common flying at dusk, on railway banks, and waste places. ♀ rather scarce.

Celæna Haworthii.—Local, but abundant, flies by day, and is difficult to catch, a very variable species.

Caradrina morpheus.—Excessively rare.

Caradrina blanda.—Rather scarce, near Aberdeen and Inverurie.

Caradrina cubicularis.—Abundant, can be found in good condition from beginning to end of season. Often covered with little red mites.

Russina tenebrosa.—Often abundant at treacle, ♀ scarce.

Agrotis valligera.—Common on ragwort and treacle on the sandhills, a very variable species.

Agrotis suffusa.—Common on treacle, uncertain in appearance.

Agrotis saucia.—Local and rare (Professor Trail), rare near Inverurie.

Agrotis segetum.—This species sometimes appears in abundance, and then disappears for a number of years; in 1888 it was very common, have not seen one since.

Agrotis exclamationis.—Abundant, also uncertain in its appearance, this rule holds good with nearly all the *Agrotis.*

Agrotis corticea.—Always scarce, very dark, Banchory, &c.

Agrotis cursoria.—Abundant on the sandhills, varies excessively.

Agrotis nigricans.—Common on the coast, not rare inland, variable, sometimes nearly black.

Agrotis tritici.—Abundant on the sandhills, rarer inland, large and distinctly marked.

Agrotis aquilina.—Very rare, recorded by Prof. Trail.

Agrotis obelisca.—Near Aberdeen, ("Lep. of Dee.")

Agrotis agathina.—Scarce everywhere.

Agrotis porphyrea.—Abundant on all heaths, have taken it 3,000 feet above the sea level.

Agrotis præcox.—Has been taken at Aberdeen, Cruden and near Inverurie, (recorded by Prof. Trail in "Lep. of Dee.")

Agrotis pyrophila.—Very scarce, but widely distributed over both counties, not uncommon last year (1890), larvæ feeds in confinement on grass, and other low plants.

Agrotis lucernea.—Not uncommon on heather patches by night, most abundant on the Kincardine coast, and along the railway banks and cuttings.

Triphæna janthina—Widely distributed, but always scarce.

Triphæna fimbria.—Rare, Pitcaple, &c.

Triphæna subsequa.—Very rare, Inverurie, &c. (Tait).

Triphæna orbona.—Abundant, our most variable species amongst the Noctuæ, dark banded varieties not rare.

Triphæna pronuba.—Abundant and as usual variable.

Noctua glareosa.—Common; light, dark, and pinkish forms are sometimes taken.

Noctua augur.—Abundant.

Noctua plecta.—Common.

Noctua c-nigrum.—Abundant.

Noctua triangulum.—Muchalls is the only recorded locality.

Noctua brunnea.—Sometimes abundant.

Noctua festiva.—Always abundant, larva feeding on bilberry and low plants at night.

var. conflua.—I have occasionally taken the small unicolorous variety on the hills, but it is always scarce.

Noctua dahlii.—Sometimes not rare, local and variable.

Noctua rubi.—Common.

Noctua umbrosa.—Very common, generally much worn.

Noctua baja.—Abundant.

Noctua sobrina—Local and always scarce, Derncleugh, Pitcaple, and Burnharvie.

Noctua neglecta. Widely distributed and not rare.

Noctua xanthographa.—Abundant, one collector says "in countless thousands," larvæ abundant on grass by night.

Trachea piniperda.—Local and scarce, smaller and darker than southern specimens.

Pachnobia carnica, (Alpina).- A few have been taken on the hills near Braemar.

Tæniocampa gothica.—Abundant, and very variable.

var. gothicina.—Distributed over both counties, but always very scarce.

Tæniocampa rubricosa.—Very common, grey form not rare.

Tæniocampa instabilis.—Abundant, and very variable.

Tæniocampa munda.—Hill of Nigg (Horne).

Orthosia suspecta.—Widely distributed, and not uncommon.

Orthosia upsilon.—Mr. Tait has taken it at Inverurie.

Orthosia lota.—Inverurie, Pitcaple, &c., always scarce.

Orthosia macilenta.—Generally rather scarce.

Anchocelis rufina.—Locally abundant, variable.

Anchocelis litura.—Abundant.

Cerastis vaccinii.—Abundant, especially in spring.

Cerastis spadicea.—Once at Pitcaple.

Xanthia cerago.—Abundant, beautiful varieties.

var. flavescens.—Not uncommon.

Xanthia silago.—Even more abundant than *cerago.*

Xanthia ferruginea.—Common everywhere.

Cosmia trapezina.—Rare, Murtle Den.

Dianthæcia capsincola.—Local, not rare.

Dianthæcia cucubali.—Very local, rather scarce.

Dianthæcia conspersa.—Common near Pitcaple, also on the coast.

Polia chi.—Abundant everywhere, the dark green variety has never been taken in this district.

Epunda lutulenta.—Used to be widely distributed, and abundant near Pitcaple, have not seen any for several years.

Epunda nigra.—Rare now, a few years ago this was one of our most abundant species.

Miselia oxyacanthæ.—Rather scarce, larvæ not uncommon at Pitcaple.

Agriopis aprilina.—Rare, Murtle Den, Tillyfourie and Pitcaple.

Phlogophora meticulosa.—Not rare, formerly very common.

(To be continued.)

THE HYMENOPTERA-ACULEATA OF LANCASHIRE & CHESHIRE,

BY WILLOUGHBY GARDNER, F.R.G.S.

(Continued from page 91.)

DIPLOPTERA.

Containing the *true wasps*, with wings folding longitudinally, both social and solitary.

VESPIDÆ.

The well-known *social* wasps, dwellers in community, of three sexes—male, female, and neuter. Some species, ground-wasps, generally construct their nests in hollows in banks, under tree roots, &c.; others (*Arborea, Sylvestris*, and *Norwegica*) hang their nests in bushes and trees.

VESPA, Linn.

crabro, Linn.—Said to have occurred at Malpas, but requires confirmation, R.N.

vulgaris, Linn.—Commonly distributed.

germanica, Fab.—Very abundant everywhere.

rufa, Linn.—Not common, B.C.; sparingly in Chester district, R.N., E.C.T.; Birkenhead, W.G.; Rainford, near Liverpool, H.H.H.

sylvestris, Scop.—*holsatica*, Fab.—Sparingly at Rowton and other places near Chester, R.N.; Bache Hall near Chester, E.C.T.; Eastham, W.G., and Rainhill, H.H.H.

norvegica, Fab.—*brittanica*, Leach.—Occasionally, Upton near Chester and Bidston, near Birkenhead, R.N., W.G.; Delamere in fir woods, B.C.

EUMENIDÆ.

Solitary wasps, of *two* sexes (male and female) only. Our one species of *Eumenes* builds a beautiful little round nest of mud among heather, storing up small Lepidopterous larvæ for its young. The members of the genus *Odynerus* burrow in various places, such as sandy banks (*O. antilope*, *spinipes*, and *crassicornis*), stalks of bramble (*O. laevipes* and *melanocephalus*), and dead wood (*O. trifasciatus*), while others select ready-made cavities, such as hollow thistle stems (*O. quadratus*), and crevices in doors, windows, &c. (*O. antilope*). The *Odyneri* prey chiefly upon the larvæ of Lepidoptera.

Odynerus, Latr.

spinipes, Linn.—Chester, E.C.T., R.N.; generally distributed, B.C.

callosus, Thoms.—*quadratus*, Sm. *nec* Pz.—Rainhill, H.H.H.

parietum, Linn.—Chester, E.C.T., R.N.; commonly distributed, B.C.

pictus, Curt.—*oviventris*, Thoms.—Upton near Chester, breeding in sand quarry, E.C.T.; Rock Ferry, J.T.G.; commonly distributed in the district, B.C.

trimarginatus, Zett.—Near Manchester, local on Scotch thistle, B.C.; Chester, E.C.T.; Wallasey sand hills, W.G.

trifasciatus, Oliv.—Common in district, B.C.

parietinus, Linn.—Delamere, very abundant, E.C.T.; Chester, E.C.T., R.N.; near Birkenhead, J.T.G.

sinuatus, Fab.—*bifasciatus*, Wesm.—Manchester and Hazelgrove, sparingly, B.C.

Passing from the first great division of the Aculeata, the *Praedones*, we come to the second, the

ANTHOPHILA.

Flower-lovers, comprising the Bees, *insects which are vegetable feeders, storing up in the cells which they construct for their young in* *various situations such delicate sustenance as honey and pollen collected from flowers, instead of animal food, as in the most of the Praedones.*

These Bees are all "solitary," consisting of male and female only, with the exception of the last three genera which are "social." As in the Praedones, many "solitary" species form large colonies of separate burrows in close proximity.

COLLETES.

These insects burrow, frequently in large colonies, either in sandy banks *(C. daviesana* and *cunicularia)*, in the softer parts of walls, or similar situations. Their little tunnels are usually 8 to 10 inches long, plastered inside, and enclosing a series of cells made of a delicate and glistening membrane; each cell contains an egg and sufficient honey and pollen for the nourishment of the future grub.

COLLETES, Latr.

- succincta, Linn.—Delamere, B.C.
- fodiens, Kirb.—Southport B.C.
- marginata, Sm.—*balteata*, Nyl., Thoms.—Wallasey, H.H.H.
- Daviesana, Sm.—Mersey banks near Manchester, J.R.H.; burrows in sandstone rock, Wallasey, J.T.G.
- cunicularia, Linn.—This is one of the specially interesting Bees of our district, the species being peculiar to it, as far as the British Islands are concerned. The species was first taken at Wallasey on May 4th, 1855, by the Rev. H. H. Higgins, but was not then recorded by him. In 1869 the insect was taken at the same place by Mr. Nicholas Cooke, and recorded by him in the "Entomologist's Monthly Magazine," p. 276, (1868-9), and in the "Entomologist's Annual," for 1870. It has since been taken freely in the same locality, B.C., H.H.H., E.C.T., J.T.G., R.N., W.G. The species has also been taken occasionally at other places in our district besides its "metropolis" at Wallasey, as at Southport, B.C.; in some numbers on the Waterloo Coursing Ground, near Liverpool, J.R.H.; abundantly at Crosby, R.N.; one specimen at Blackpool by Mr. C. E. Stott, one at Rock Ferry, J.T.G., and one at Chester, E.C.T.; so it is evidently more widely distributed than was at first supposed.

(To be continued).

General Notes.

MICRO-LARVÆ FOR THE MONTH.—The pleasures of a pleasant country ramble in the early morning during the month of June is thoroughly appreciated by every field naturalist, for the sun is gradually rising and the stillness around is occasionally broken by the melodious song of the skylark, as he wings his way upward till almost lost to view; the freshness and luxuriance of the vegetation is a reminder that larvæ are now feeding everywhere, so we must make the best use of the little time at our disposal to search for those species we should like to obtain. We notice in our stroll over the chalk downs that insects are now getting plentiful, and as we stoop to examine the beautiful Bee orchis, now coming into flower, we notice the leaves of the sun cistus *(Helianthemum vulgare)* are drawn together and bleached by the larva of *G. tæniolella* and the shoots by the larva of *G. sequax*, the larva also of *Col. onosmella* may still be taken on the viper's bugloss *(Echium vulgare)* and occasionally we find the leaves of the black knapweed *(Centaurea nigra)* drawn together by the larva of *Dep. liturella.* We can now obtain the larva of *C. horridella* by beating sloe and wild apple bushes, and from hawthorn *C. scabrella*; the beautiful velvety oblique marked larva of *C. nemorella* is now to be taken on honeysuckle, and in the seeds of *Stellarea holostea*, the yellowish larva of *Gel. maculea.* The seed heads of chenopodium and atriplex are now being drawn together by the pretty striped larva of *G. atriplicella*, and the *Genista anglica* is now having its leaves mined by the larva of *G. albipalpella* and *Col. genestæcolella*; the leaves of the chenopodium are also being mined at this time by the larva of *G. næviferella* and *G. hermannella.* In the drawn together shoots of *Inula dysenterica*, the larva of *A. granitella* will now be found nearly full grown, and some of the leaves of *Hypericum* will be found neatly folded over by the larva of *Grac. auroguttella* into a perfect cone. The large black cases of *Col. vibicella*, on leaves of *Genista tinctoria* cannot fail to be observed, and the dull green larva of *Gel. lentiginosella* will be found the same time drawing the shoots together; on rose, the larva of *C. gryphipennella* will be found by the bleached appearance of the leaves, and in the leaves of dogwood *(Cornus sanguinea)* the larva of *A. pfeifferella* is now busily at work, from which they will now soon cut out their oval cases and drop to the ground. This is the time to examine the leaves of poplars for the larva of *Phyl. suffusella*, which are betrayed by the snail-like track on the surface of the leaves. It would occupy far too much space to enumerate all the species to be taken this month, but it is as well to examine any distorted shoot or unhealthy looking plants we may come across in our rambles, for it is in such as these we are most likely to find those larvæ we are in search of.—G. ELISHA, Shepherdess Walk, City Road, London.

A. CRATÆGI.—Mr. Tutt in the "Record" for April last, says that he should have thought that Mr. Hodgkinson would have known that the record of the specimens vouched for by Mr. Webb, "Entomologist's Monthly Magazine," Vol. XXIV., p. 131 (1887), was the last record of this species. This, however, is not the case, as *A. cratægi* was taken near Ramsgate in 1888, and duly recorded both in the "Entomologist," Vol. XXI., p. 184, and in the "Young Naturalist." I wrote to the "Record" to point this out but Mr. Tutt has not thought fit to correct his error.—C. A. BRIGGS, 55 Lincoln's Inn Fields.

NOCTUA FESTIVA AND VAR. CONFLUA.—In Mr. Farren's note on the above, he refers to my remark that Mr. Tutt wished to establish the *conflua* of the Shetland Islands as a species, and says (ante, p. 101), "I don't think Mr. Tutt wishes to do anything of the sort." In his recently issued work on variation in British Noctuæ, when describing *conflua* (page 122), Mr. Tutt says "*Noctua*, Linn., *conflua*, Tr. (sub species). The narrow and more pointed forewing of the Shetland specimens known by the above name, as well as the difference in tint from any form of *festiva*, at once single this out as distinct from the latter species. The line of demarcation between this and *festiva* is as clearly definable as that between many other species generally recognised as distinct." I am at loss to understand how any impartial person who has carefully read the foregoing can come to any other conclusion, than that Mr. Tutt does wish to establish var. *conflua* as a species or sub-species. With regard to my statement, that were Shetland forms of *festiva* and var. *conflua* mixed up it would be impossible for the most experienced Entomologist to tell t'other from which, he says that "If Mr. Hewett has any *festiva* from the mainland which he cannot separate from the true Shetland var. *conflua*, all I can say is that they must be true *conflua* also, and he has proved that it is to be taken on the mainland." If Mr. Farren will quote what I really did say, and not what I did not say, he will find that I have not admitted having any *festiva* from the mainland which I am unable to separate from the true Shetland var. *conflua*, nor, indeed, have I seen any mainland *festiva* which I should have any difficulty in differentiating from Shetland *conflua*. It is in separating the Shetland form, or forms, of *festiva* from the variety *conflua* that the difficulty occurs.—W. HEWETT, Howard Street, York.

[I have Shetland (Unst) specimens of this insect with the form of wing Mr. Tutt gives to *festiva*, and I have an Aberdeenshire specimen with the same form of wing, which is of similar hue to the so-called *conflua* from Shetland.—ED. B.N.]

PLAGIODERA ARMORACIÆ.—During a recent visit to town I had the pleasure of an introduction to this uncommon species of Chrysomelidæ through the kindness of my friend Mr. Lewcock. Although the weather was of the usual severity of our English spring, and a bitter east wind was blowing, we armed ourselves with the necessary chisels and under my friend's guidance I was, after a short railway journey, deposited at our destination. A short walk along a lane, which later in the year would probably afford excellent results from the exercise of the sweeping net, brought us to a place where a row of pollard willows bordered a small brook. This was the metropolis of *Plagiodera* and on the rugged bark of these willows we brought our chisels to bear. *Plagiodera armoraciæ*, like its commoner relative *Phratora vitellinæ* hybernates in the deepest chinks of the bark of the tree on whose leaves during all the stages of its career it has subsisted. They were nestled sometimes two and three together, in the innermost recesses, or even on the underside of the bark. Sometimes we could just catch sight of a steel blue gleam of elytron esconsed deep in a chink, and then the greatest care had to be exercised in the extraction. They were not, however, plentiful, and a great deal of decortication had to be done to secure a very limited number I, however, was very well content; pollard willows, clear sinuous brook, *Plagiodera*, were all new to me, and not to be found in our less favoured county of Cheshire, so I returned after a very pleasant afternoon, and with a new species to add to my collection. I should add that on inspection two other species were found among our captures: *Phratora vulgatissima* and *Phædon cochleariæ*.—W. E. SHARP, Cheshire.

KILLING INSECTS ON THE SETTING-BOARD.—Sometimes we find our insects revive after they are set. Instead of taking them off the setting-board again, I used to drop a little chloroform on them, but now I cover them with napthaline and in a short time they are dead. The setting-board can then be turned upside down and the napthaline will fall off leaving no traces behind.—F. MILTON, 184 Stamford Hill, N.

[It is sometimes an advantage for our insects to revive on the boards, as they often deposit ova then, that we would not otherwise obtain. A friend of mine obtains ova of *Bractea* regularly in this way. I strongly recommend albo-carbon instead of napthaline in all cases where the latter is used. It is not a tenth of the cost and is quite as effective.—ED. B.N.

BIRDS' EGGS AT THE SOUTH LONDON EXHIBITION.—We noticed that Mr. J. A. Cooper exhibited a splendid collection of birds' eggs and nests at the South London Entomological Society. Among others were an exceedingly variable series of the eggs of the guillemot and razor-bill, also a variable lot of lapwings' eggs, including two white varieties. Long and varied series of the eggs of the golden plover, three species of tern, great black-backed gull, one of the eggs of the latter being nearly white. A number of eggs of the cuckoo, with the nest and clutches of eggs in which they were taken, including the nests of the wagtail, tree pipit, chaffinch, greenfinch, hedgesparrow, robin, flycatcher, yellow bunting, etc. There were also long series of eggs, exhibiting the variation in different clutches of the same species. The nests of the pied flycatcher (Yorkshire), Dartford warbler (Surrey), wild duck, redshand, lapwing, plover (the last four from Essex marshes), a peculiar flat nest of the chaffinch with a clutch of white eggs, goldfinch (Surrey), goldcrest and wood wrens (New Forest), various warblers, &c, were most interesting, whilst the different clutches of the red-backed shrike showed great variety, not only in the different clutches of eggs but also in the materials used for nest making. It is most interesting to find a collection of birds' eggs with the variation worked out in a scientific manner.

Colias edusa.—It may interest the readers of the "British Naturalist" to know that two specimens of this butterfly were observed here on May 26th. My father and my sister each saw one.—Herbert Ashby, Southampton.

Variety of Arctia mendica.—Mr. Lumsden, of this town, has bred a very curious variety of the female of this species. The fore wings are cream coloured, with two black spots on the median nervure, the hue being decidedly deeper than that of the males of the Irish variety. The hind wings are of the usual dead white, with two small spots near the hind margin, and contrast very strikingly with the fore wings. Mr. Lumsden has, with the greatest kindness, presented me with the specimen.—John E. Robson, Hartlepool.

Mollusca.

DIAGNOSES OF LAND SHELLS.

BY C. F. ANCEY.

I.—*Ennea consobrina*, Ancey.

Testa compresse subrimata, cylindraceo-obtusa, subnitida, albida, oblique tenuiter striata (striis confertis, regularibus, ad summum evanidis). Anfractus 8,—primi quatuor summum valde obtusum efformantes, sequentes diametro subæquales,—convexiusculi, sutura impressa simplicique; ultimus subattenuatus, haud ascendens, basi minute, et extus latius scrobiculato-impressus. Apertura verticalis, oblongo-ovata, extus post medium leviter arcuato-producta, dentibus vel plicis ringens, scilicet: una magna, acinaciformi, contorta et valide intrante in pariete, prope angulum superum; columellari obtusa, dentiformi, profundius sita; dente basali minuto acutoque ad sinistram baseos, et denique callo incrassato in labio dextro pliculos 2 gerente (primo vix majore, superne contortulo, intervallum inter plicam parietalem et marginem, sinulo simile efficiente). Peristoma album, incrassatum, nitidum, expansum, marginibus callo tenui junctis.

Long. 8, diam. 3¾, alt. apert. 2½, lat. ejusd. 2¼ mill.

Albany, Eastern Cape Colony (from the collection of Brockton Tomlin, Esq.)

This shell is allied to a recently published species from the same country, viz.: *E. thelodonta*, Melvill and Ponsonby. The denticles in both are nearly similar, although somewhat different, but our shell is twice as large and possesses 8 whorls.

II.—*Helix Melvilliana*, Ancey.

Having recently described a new species from Walwich Bay, Ovampoland, under the name of *Chapmani*, I have just been informed the latter name is pre-occupied by Cox, and I venture to suggest the above one for my shell. This belongs to the section *Sculptaria*, Pfeiffer, which is quite peculiar to this portion of the African continent including the territories south of Benguella and north of the Cape Colony.

III.—*Nenia Orbignyi*, Ancey.

Testa fusiformi-cylindrata, opaca, vix nitens, obscure fusca, ad suturam anfractuum medianorum pallida. Spira elongata, obtusa, subfusiformis, utrinque parum attenuata; anfractus 8, convexi, sutura impressa, primi duo lævigati, sequentes confertim et *valde* oblique costulato-striati, striis ad aperturam tenuioribus; ultimus attenuatus, antice breviter solutus, in tubam antice productus. Apertura subobliqua, livida, peristomate pallido, oblongo - subrotundata. Lamella parietalis marginem attingens, valida, dehinc intus contorta et subito debilior, spiraliter prodiens; columellaris supera, obliqua, dehinc spiralis; plica palatalis unica, supera, lineam lateralem haud attingens, attamen longa, haud procul ab apertura desinens. Lunella longa, prope initium plicæ intus post partem dorsalem iniens, arcum similem litteræ C inversæ simulans. Peristoma incrassatum, expanso-reflexiusculum.

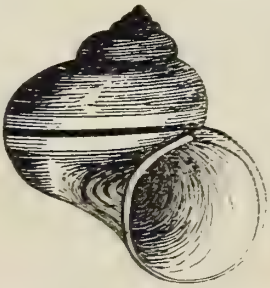
(a) Long. 28, diam 6, alt. apert. 6, diam. ejusd. 5½ mill.

(b) Long. 25½, diam. 6, alt. apert. 6, diam. ejusd. 5½ mill.

Santa Cruz de la Sierra (Bolivia).

Allied to *Clausilia Crossei*, *Hidalgo*, but very distinct.

IV.—*Cyclostoma Burtoni*, Ancey.



Testa turbinata, solidula, parum nitida, anguste (pro genere) umbilicata, infra suturam sulcis numerosis exilibus, ad summum

testæ et ad partem medianam ultimi anfractus evanescentibus exarata, atque *liris* remotis distantibus perdistinctis (circa 8-10 perspicuis) in regione umbilici adornata, zona unica infra peripheriam castanea angustaque cincta, fusca, violaceo tincta, ad apicem et partem inferam paulo dilutior et supra infraque vittam ultimi carneo-fulva. Spira conico-elevata; anfractus 5, rotundati, sutura profunda; ultimus ventricosus, perconvexus, antice longe et parum conspicue deflexiusculus. Apertura fere circularis, breviter adnata, paulum obliqua, superne vix subangulata. Peristoma continuum, simplex, ad columellam tantum subpatulum.—Operculum ? (verisimiliter normale).

Diam. maj. 19, min. 16, alt. 19; apert. long. 10 mill., lat 9.

Found by some French Missionaries in the vicinity of Lake Tanganyika.

This fine shell is allied to *C. anceps*, v. Martens, from Ukamba; it differs by its stature, darker colour which is even dissimilar, the number of its whorls, the straight zone of the last one, and chiefly the sculpturing of the umbilicus which is formed by distant prominent liræ, the first one being the most developed.

Notes.

Rissoa parva, DaC.—Two or three months ago I quoted the brown or chocolate variety of this species as var. *nigra*, Norman, according to the privately printed catalogue of Canon Norman's collection (1888). Mr. T. D. A. Cockerell has just called my attention to his var. *lurida* in the "Quarterly Journal of Conchology," 1887, p. 151, which is identical with var. *nigra*, Norman, and has priority. I find, however, that these names are antedated by MM. Bucquoy, Dautzenberg, and Dollfus, in their "Mollusques Marins du Roussillon," Vol. I., 274, where the form is described as var. (ex colore) *fusca*. I should mention that the work referred to is being published in parts, and that the 8th "fascicule" containing this variety appeared in September, 1884.—B. Tomlin, Llandaff.

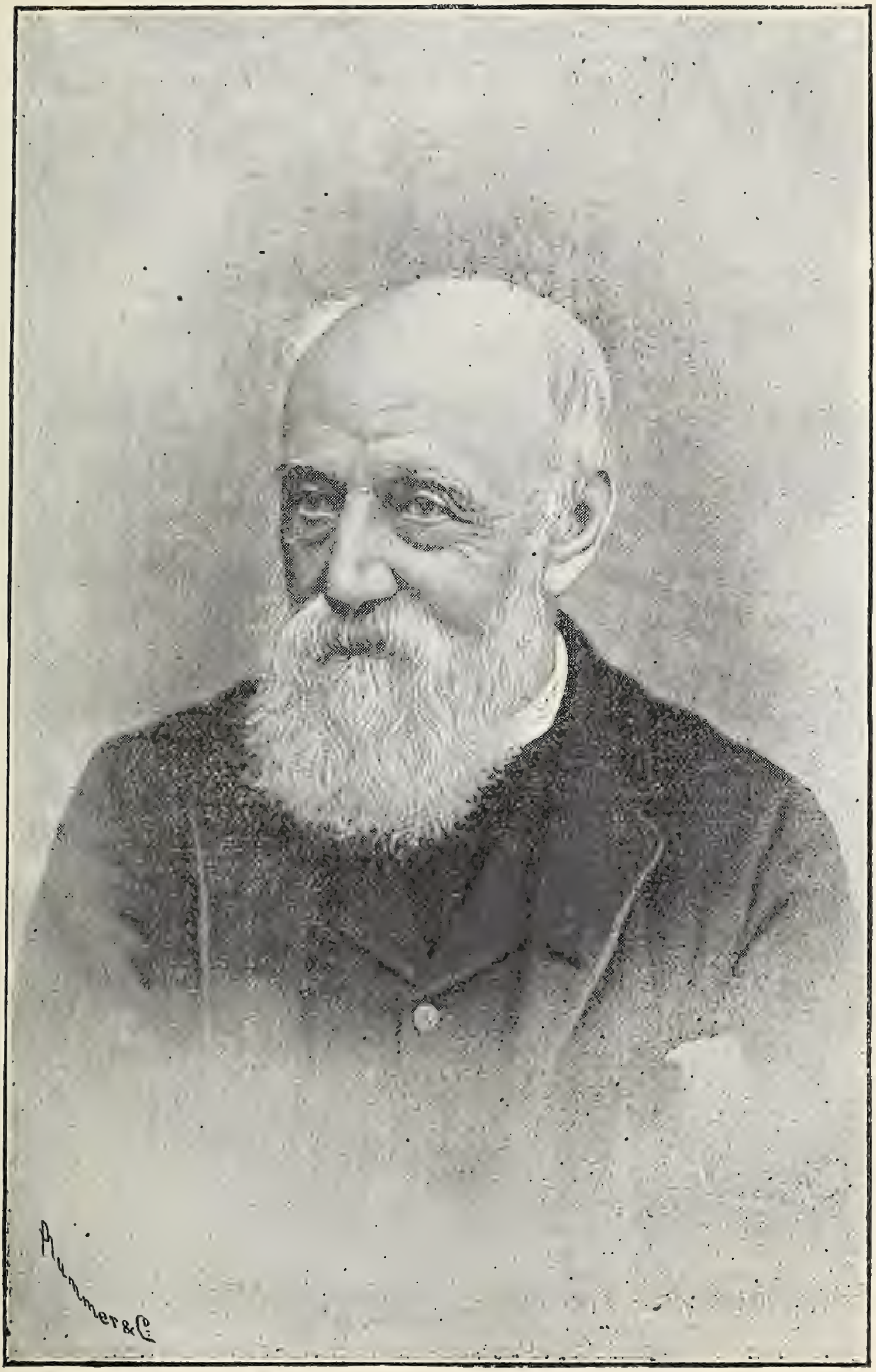
Notes on Varieties.—The remarks made by me in former notes are strongly confirmed in a paper by M. Collin, published in the "Memoires of the Société Malacologique de Belgique." This paper was written twenty years ago, and treats of *L. stagnalis*. A few experiments on breeding are given, and the conclusions arrived at are identical with my own. The author found a considerable number of examples having the animal of a bright golden or orange-yellow colour, "d'un beau jaune d'or, presque jaune orange." A number of these he transferred to his aquarium; under the altered conditions the colour of the young was, to a certain extent, similar to that of the parents. 'Généralement elle tend à perdre peu à peu sa brillante couleur d'or pour devenir d'un blanc de lait, mais parfois anosi elle se reproduit de couleur aussi vive." A yellow example mated with one of the ordinary colour, the young were some yellow, others blackish, but later all became of the latter colour. Two yellow individuals having mated, the colour of the young differed, some were blackish-yellow, "jaune noirâtre," others yellowish-white, "jaune blanchâtre," the colour in both cases gradually becoming brighter, "peu à peu plus vive." The var. *sinistrorsa* M. Collin found in considerable numbers in the years 1871 and 1872, in the first year the greater number of individuals were adults, in the second year a large proportion were fragile and more slender, these facts leading the writer to the conclusion that there were two generations. Those placed in the aquarium produced sinistral young. The author points out the impossibility of a union between individuals of the dextral and sinistral forms, and concludes his remarks on this variety as follows: "Il est donc de fait acquis que la variéte sénestre est héréditaire et se maintient." The variety *maxima*, 8 cm. (above three inches) in length, when placed in the aquarium produced the progeny much smaller than the parents, still smaller in following years, till the var. *aquarii*, 16 mm. was finally produced; but the race was produced in the natural habitat, "Ce milieu ne changeant pas, la variété devint héréditaire." These facts appear to me to prove that size depends on environment. Before leaving this most interesting paper I will quote one more sentence showing the author's opinion of the permanence of varieties under suitable conditions. "Lorsque deux Limnées de variété semblable, quelqu'éloignée qu'elle soit du type, s'accouplent et vivant dans des conditions identiques á celles dans lesquelles elles sont nées et ont vécu elles-mêmes, la variétè de form ou de couleur de l'animal ou de la coquille persistera chez les petits."—W. A. Gain, Tuxford.

Errata.—Page 105, between last and preceding line insert "mysterious characteristics of this."

NATURALISTS OF THE DAY.

V.—J. W. DOUGLAS, F.E.S.

John William Douglas was born on 15th of November, 1814, and is therefore nearly 78 years of age. From his early days, being a lover of nature, he was intended for a botanist, and was taught accordingly, but when he was 20 years of old he received an



J. W. DOUGLASS, F.E.S.

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appointment in H.M. Customs, in which service he continued for more than 50 years, for the last 13 of which he was chief of the Export Department. During the greater part of this period he had but little time, apart from his official duties and his family cares, but he devoted his leisure to entomology. For a long time he collected and studied British Lepidoptera, and contributed many papers to the current journals (see "Hagen Biblioth. Entomol."); among other Memoirs, a Monograph of the British species of the genus *Gelechia* to the "Transactions of the Entomological Society." He was the acknowledged helper of Stainton, in the "Natural History of the Tineina." With the assistance of John Scott he compiled the "British Hemiptera" for the Royal Society, and furnished much of the material that Scott published in the "Entomologist's Monthly Magazine." He also described several new species of *Typhlocybidæ* therein; he has been one of the Editors of that journal for the last 17 years, and has contributed thereto, among other matter, a series of articles on the Coccidæ, in which many new species are described. He also made an extensive collection of British Coleoptera, but wrote only occasional notes about them.

Reports of Societies.

ENTOMOLOGICAL SOCIETY OF LONDON.

April 27th, 1892.—Robert McLachlan, Esq., F.R.S., Treasurer, in the chair. Mr. William Edward Baily, of Lynwood House, Paul Churchtown, Penzance; and Mons. Edmond Fleutiaux, of 1, Rue Malus, Paris, were elected Fellows of the Society. Mr. C. G. Barrett exhibited, for Mr. Sabine, varieties of the following species:—*viz.*, one of *Papilio machaon*, bred by Mr. S. Baily, at Wicken, in 1886; one of *Argynnis lathonia*, taken at Dover in September. 1883; one of *A. euphrosyne*, taken at Dover in 1890; and one of *A. selene*, taken at St. Osyth, in 1885, by Mr. W H. Harwood. He also exhibited a long series of *Demas coryli*, reared by Major Still from larvæ fed exclusively on beech, which he said appeared to be the usual food of the species in Devonshire, instead of hazel or oak. Mr. Barrett also exhibited, for Mr. Sydney Webb, a number of varieties of *Arge galathea*, *Lasiommata megæra*, *Hipparchia tithonus*, and *Cænonympha pamphilus*, from the neighbourhood of Dover. The Rev. J. Seymour St. John exhibited a variety of the female of *Hybernia progemmaria*, taken at Clapton in March last, in which the partially developed wings were equally divided in point of colour, the base being extremely dark and the outer portion of the wing very pale. The Rev. Canon Fowler made some remarks on the subject of protective resemblance; his attention has been recently called to the fact that certain species of *Kallima* apparently lose their protective habit in some localities, and sit with their wings open, and that Dr. A. R. Wallace had informed him that he had heard of a species of *Kallima* sitting upside down on stalks, and thus, in another way, abandoning its protective habits. Mr. W. L. Distant referred to certain species of South African butterflies, which, when at rest, were protected by their resemblance to the plants on which they reposed, or by their resemblance to the rocks on which they settled, but which frequently abandoned their protective habit and sat with open wings. Mr. Barrett, Mr. McLachlan, Mr. Jacoby, Mr. Champion, Mr. H. Goss, Canon Fowler and Mr. Frohawk continued the discussion. Mr. Goss informed the meeting that, in pursuance of a Resolution of the Council passed in March last, he and Captain Elwes had represented the Society at the recent Government enquiry, as to the safety and suitability of the proposed Rifle Range in the New Forest, held at Lyndhurst by the Hon. T. W. H. Pelham, on the 20th, 21st, 22nd and 23rd inst., and that they had given evidence at such enquiry, and addressed a large meeting of War Office officials, Verderers, and Commoners.

May 11.—Frederick DuCane Godman, Esq., F.R.S., President, in the chair. Dr. Edward A. Heath, M.D., of 114, Ebury St., Pimlico, S.W.; and Mr. Samuel Hoyle, of Audley House, Sale, Cheshire, were elected Fellows of the Society. The President announced the death, on the 4th of May, of Dr. Carl August Dohrn, of Stettin, one of the ten Honorary Fellows of the Society. Mr. Stainton expressed regret at the death of Dr. Dohrn, whom he had known for a great number of years, and commented upon his work and personal qualities. Dr. D. Sharp exhibited drawings of the eggs of a species of Hemiptera, in illustration of a paper read by him before the Society; and also a specimen of a mosquito, *Megarhina hæmorrhoidalis*, from the Amazon district, with the body, legs and palpi furnished with scales as in Micro-Lepidoptera. The Rev. Canon Fowler, on behalf of Mrs. Venables, of Lincoln, exhibited cocoons of a species of *Bombyx* from Chota Nagpur, India; also the larvæ-cases of a species of Psychidæ, *Cholia crameri*, from Poona, India; and a curious case, apparently of another species of Psychidæ, from the island of Likoma, Lake Nyassa. Mr. F. W. Frohawk, on behalf of the Hon. Walter Rothschild, exhibited a specimen of *Pseudacræa miraculosa* mimicking *Danais chrysippus*; also a specimen of the mimic of the latter,—*Diadema missippus*, and read notes on the subject. Mr. C. G. Barrett exhibited, and commented on, a long series of specimens of *Melitæa aurinia* (*artemis*) from Hampshire, Pembrokeshire, Cumberland, and other parts of the United Kingdom; also a long and variable series of *Coremia fluctuata*. Mr. H. Goss exhibited, for Mr. W. Borrer, jun., Hurstpierpoint, a photograph of a portion of a nest of *Vespa vulgaris* which had been built with the object of concealing the entrance thereto and protecting the whole nest from observation. He also read notes on the subject, which had been communicated to him by Mr. Borrer. The Hon. Walter Rothschild communicated a paper entitled "Notes on a collection of Lepidoptera made by Mr. Wm. Doherty in Southern Celebes during August and September, 1891." He also sent for examination the types of the new species described therein. Dr. Sharp read a paper entitled "On the eggs of an Hemipterous Insect of the family *Reduviidæ*."—H. Goss and W. W. Fowler, *Hon. Secs.*

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

May 19th.—Messrs. R. Adkin, F.E.S., and R. South, F.E.S., were elected members of the Society. Exhibits:—Lepidoptera—Mr. Riches, a living larva of *Agrotis nigricans* and pupa of *Hepialus humuli*. Mr. Clark, a cabinet drawer containing 33 species of *Depressariæ*. Dr. Sequeira, a large number of dwarfs of various species with types for comparison, the most noticeable being *Vanessa polychloros*, *Lycæna corydon*, *Setina irrorella* and *Sesia chrysidiformis*. Mr. Bloomfield, large number of *Tæniocampas* and two *Selenia illustraria* from Epping Forest. Mr. Bacot, *Tæniocampa instabilis* from Epping Forest and a living specimen of *Lophopteryx camelina* taken at Clapton, the same day Mr. Bayne: a series of *Amphidasys prodromaria* from Epping Forest and three examples of *Tæniocampa populeti* from the same locality. Mr. Hill: a series of *Tæniocampa gothica* and var. *gothacina* from Rannock; also examples of *Hylophila prasinana* with the green colour changed to yellow by the action of cyanide. Mr. Southey: a very fine series of *Notodonta dromedarius* from Highgate Woods. Dr. Buckell: a series of *Selenia illunaria* bred from a pair of last summers brood. From these ova, two larvæ fed up and emerged last autumn and were of the æstival form, but the remainder went over until this spring and produced the vernal form. Mr. Milton; *Colymbetes notatus*, *Agabus conspersus*, *Hydrobius oblongus* and *Hydroporus parallelogrammus*. Mr. Heasler; *Anchomenus viduus* and *Simnebius papposus* from Mitcham. Dr. Buckell read a paper by Mr J. Alston Moffatt, from the Report of the Entomological Society of Ontario, Canada for 1891, on the microscopical appearance of the unexpanded wings of *Callosomia promethea*. A most interesting discussion ensued, in which Drs. Buckell and Sequeira and Messrs Clark, Simes, Bayne and others took part. A. U. BATTLEY and J. A. SIMES, *Hon. Secs.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

April 14th.—C. G. Barrett Esq., F E.S., President, in the chair. Mr. South exhibited several series of *Arctia caja*, and read notes on the variations of this species and said there were two questions which suggested themselves, viz, were rare varieties the result of some occult influences of which we had no knowledge or were they the offspring of well matched parents? It occurred to him that increase or decrease of dark color was really due to what might be termed accident of birth. Mr. South also exhibited specimens of *A. caja*, artificially darkened by being killed with nicotine just after the expansion of the wings and before they had dried. Mr. C. G. Barrett exhibited a long series of *Noctua festiva*, from all parts of the British Isles including Shetland and stated that Mr. Hart of Dublin had taken what appeared to be a partial second brood and some of these were comparable to the so-called *Noctua conflua*, Mr. Barrett expressed the opinion that the series shewn were all one species. Mr. Adkin also exhibited series of *N. festiva* from Forres, Rannock, and Shetland. Mr. Tugwell southern forms of *N. festiva*, specimens from Aberdeen and one from Kincardinshire similar to the Shetland form. In the discussion which ensued Mr. Tugwell remarked that the late Mr. Doubleday was of opinion that *Noctua festiva* and *conflua* were indentical. Mr. Lewcock said that from an examination of Mr. Tutt's long series of *festiva* and *conflua* he could observe no satisfactory specific distinction. Mr. Fenn questioned the appearance of a second brood in so short a time. In the examples he had from Shetland some had narrow and others broad wings, and he expressed an opinion that the narrowness of the wings arose, from the hardness of the conditions of life to which the species was exposed in the Shetlands and was a kind of immaturity. Mr. South said that Mr, Tutt based his distinctions of *Noctua festiva* from *conflua*, mainly on the shape of the wings, whereas Treitschke in his description of the last named species did not refer to shape; the original types came from the Reisenbitge Mountain in Silesia. Since then specimens had been obtained from Iceland and referred to the *conflua* of Treitschke; the Shetland specimens were not in any way referable to this type, but were the var. *thulei* of Staudinger: The narrow wings in his opinion were not due to immaturity but were an aid to strong flight which was often a necessity in bleak localities. The moorland form of *festiva* was not peculiar to the north as he had taken it in Devonshire. Mr. Barrett exhibited a specimen of *Notodonta bicolor*, which was taken in Devonshire in 1880, and until recently had been in a local collection under the name of *Notodonta cucullina*. Mr. Lewcock, vars. *Silpha atrata* from English, Scotch and Irish localities, var. *rotundaria* collected from the Orkneys and Ireland, also *Mesites tardii*, Curt., male and female to show that in the male the antennæ are inserted nearer the apex of the rostrum than in the female and that the male has a much stouter rostrum. It was also noted that this species was now taken in quantity under the bark of old holly trees.

April 28th.—C. G. Barrett Esq, F. E. S., President, in the chair. Mr. J. V. Blackford M.B., F.R.C.S., was elected a member. Mr. A. Cant exhibited a case of the genital organs of the Hesperiidæ, mounted in such a manner that they could be kept with the series in the cabinet. Mr. Frohawk varieties of the underside of *Pieris rapæ*, from Cambridge, a variety of *Argynnis euphrosyne*, and a black example of *Apatura iris*, without any spots on the inferior wings. Mr. C. G. Barrett, on behalf of Major Still, a series of *Demas coryli*, reared this Spring and showing the variation the species was subject to in Devonshire; Mr. Barrett pointed out that in some cases the central markings were eliminated. On behalf of Mr. Sabine, Mr. Barrett also exhibited a variety of *Papilis machaon*, with the dark bands narrow and marginal primrose spots broad and bright, a specimen of *Argynnis lathonia*, with large black spots and the wings suffused with a peculiar bronze colour, *Argynnis euphrosyne*, having the black spots massed together into large sharp deep black bands and the fulvous colour in bright intermediate bands, also a much suffused specimen of *Argynnis selene* with the black spots massed in broad ill defined bands. Mr. Barrett also, on behalf of Mr. Sydney Webb, exhibited varieties of *Galatea*, varying from dark to very pale forms, Mr. Billups exhibited *Pimpla graminella*, Schr. remarking that the cocoons were obtained from a larva of *Odonestis potatoria*, and given to him by Mr. Fenn in January 1891, four specimens were bred in 1891 and nineteen had emerged during the present month. Mr. E. Step exhibited a large collection of Lichens and contributed notes and observations thereon.—H. W. Parker and A. Short. *Hon. Secs.*

The 12th Annual Exhibition was held on the 5th and 6th May at "The Bridge House," London Bridge, S.E. Mr. C. G. Barrett, F.E.S., President, supported by Mr. J. Jenner Weir, F.L.S., &c., Vice-President, formally opened the exhibition, which comprised samples of all branches of Biological Science. The exhibits were arranged in three large rooms, in a fourth room Mr. Reeves exhibited original diagrams of horses in motion and explained his drawings by the aid of a zoetrope, and a fifth room was set apart for lectures which were illustrated by slides thrown on a screen by the Oxy-hydrogen lantern. During each evening Mr. F. Enock, F.L.S., &c., gave the "Life history of the trap-door spider," illustrated by his original micro-photographs. Mr. E. Step "A talk about toad-stools" and Mr. G. Day, F.R.M.S., "Domestic friends and foes." Among the more important of the "Entomological" exhibits were those of Mr. J. H. Leech who showed a number of drawers containing Palæarctic Lepidoptera comprising extensive series of *Smerinthus ocellatus* and *S. populi*, together with the Algerian *austanti* and its var. *staudingeri* and the Russian *tremulæ*; *S. tiliæ* in great variety, with *christophi*, Staud. and *tartarinovii*, Brem., many beautiful forms of *Bombyx quercus*; a selection of Japanese Noctuæ, including remarkable forms of many species of the genus *Tæniocampa*. Mr. S. Edward, a large selection of Exotic Rhopalocera. Mr. J. Jenner Weir, also showed Exotic species arranged to show mimicry. Mr. Crochett, life histories of many silk producing species of Bombyces. British Lepidoptera was represented by over forty exhibitors, including Mr. C. G. Barrett's varieties of *Pieris napi*, *Anthocharis cardamines* and *Lycæna icarus*; extensive series of varieties of *Agrotis cursoria* and *S. tritici* from the East coast of England to West of Ireland; also extreme varieties of *Odonestis potatoria*, the colour of the males ranging from chocolate to pale buff. Mr. Barrett also exhibited a drawer of varieties of Rhopalocera, which included Mr. E. Sabine's varieties of *Argynnis lathnia*, *A. euphrosyne* and *A. selene*. The Rev. Joseph Green, a specimen of *Epinephele janira*, with all the wings longitudinally and regularly striped between the nervures with a satiny-whitish drab colour. Dr. Wheeler a striped and banded example of *Argynnis aglaia*. Mr. J. E. Robson, a striking form of *Colias hyale*, Mr. S. Webb, fine forms of *Melanargia galatea*, gynandrous and partially gynandrous specimens of *L. corydon.* Dr. Mason, almost entirely black specimens of *Argynnis aglaia* and *A. euphrosyne.* Mr. C. S. Gregson varieties of *Dianthœcia conspersa* from many localities, also a magnificient series of *Abraxas grossulariata* many being extremely pale and others having the whole or the greater part of the wings suffused with black scales. Mr. Tugwell also had some very fine varieties of *A. grossulariata*, also extreme forms of *Tephrosia crepuscularia* and *biundularia* and fine series of many rare species including *Boletobia fuliginaria.* Mr. J. A. Clark, splendid series of *Spilosoma lubricipeda*, *S. menthastri* and *Lœlia cœnosa.* Varieties of *Arctia caja* were exhibited by Mr. T. W. Hall, S. Short, A. W. Mera and Goldthwait. Mr. J. Henderson showed a drawer of forms of *Tephrosia crepuscularia.* Mr. Machin, long series of the genus Acidalia, also of *Asteroscopus nubeculosa*, *Dicranura bicuspis* and *Drepana sicula.* Mr. Tutt, long and variable series of *Tœniocampa gothica* and other species of Noctuæ. Mr. Farren, a series of yellow examples of *Bryophila perla*, and series of *B. impar*, Warren., taken at Cambridge and arranged side by side with a long series of *B. glandifera*, also interesting series of Geometræ from Cambridge, Mr. C. H. Williams, a gynandrous specimen of *Argynnis paphia*, taken by him in the New Forest in 1891. Mr. R. Adkin, British Sphinges and Bombyces arranged to show local variation, also types of a collection of Micro-Lepidoptera made at Rannock in 1891 illustrating an article on the local variation recently contributed by Mr. Adkin to the "Entomologist." Mr. Wellman, his collection of the genus *Dianthœcia*, a long series of *Notodonta carmelita*, and *Cidaria russata*, taken at and bred from ova obtained from numerous localites. Mr. Adye, some of the rarer Sphinges. Mr. R. S. Standen, fine varieties of species of the genus *Argynnis.* Mr. Jäger *Callimorpha hera* and var. *lutescens*, also the larvæ of the species. Mr. South, nearly the whole of his collection of British Pyrales, Crambi, Pterophori and Tortrices; a selection of British Noctuæ among which were extensive series of most of the polymorphic species in this group; a drawer of *Lycœna icarus*, showing the colour range of both sexes, one very blue female without the black discoïdal spots was especially interesting; a drawer of Geometræ showing that the colour and ornamentation of the female parent is transmitted to a large proportion of her off-spring. Mr. Merrifield, the cases of *Selenia illustraria*, *S. illunaria*, &c., &c. recently exhibited by him at a meeting of the Socieiy were on view and were rendered more attractive by an additional case showing the effects of temperature applied for a very few days to pupæ at a sensitive stage, *i.e.*, just before they began to show colouring. Mr. Hawes, Rhopalocera bred and captured during 1890 and 1891, these included some very fine and beautiful forms. Life histories of many species mounted on the natural food plants were shown by Mr. Simes, Mr. Quail, and Mr. A. J. Crober and preserved larvæ were exhibited by Mr. Raine. In other orders Mr. R. McLachlan exhibited four drawers of European Neuroptera. Coleoptera were shown by Mr. W. West, Mr. G. Lewcock, fine series of the genus *Donacia*, and Mr. T. R. Billups; the last named gentleman also exhibiting British Hemiptera, Heteroptera, and Homoptera, each specimen being labelled with the date of and locality where captured; rare species of Hymenoptera—Aculeata, Ichneumonidæ, long series, many being unique and others new to science, also two drawers showing the life histories of many species of internal parasites, showing the imagines and larval stage of the Lepidopterous host from which bred, the addition of the cocoon of the parasite did much to complete an exhibit which was certainly one of the most instructive in the room. Mr. Auld showed a nest of the Hornet and Mr. H Moore, Exotic Orthoptera and Wasps' nests from Nova Scotia, Demerara, Bermuda and Nassau. Mr. C. H. Goodman had two cases illustrating the comparative anatomy of the different orders of insects. In addition to the "Entomological" exhibits there was a fine display of birds, birds nests and eggs, fish, reptiles marine, and freshwater land shells, also living reptiles, mollusca and insects, interesting collections of botanical specimens and Mr. A. E. Pearce's water-colour studies of British plants. The microscopical exhibits were as interesting as on former occasions, among the more important exhibits being those of Mr. T. D. Ersser who showed the circulation of the blood in a gold carp, a most interesting subject Mr. J. H. Stanley, spawn of perch; Mr. H. Grove, the circulation of sap in water plant, Nitella; Mr. R. Nacer, heads and eyes of various species of Arachnida; Mr. W. West, fresh-water Polyzoa; Mr. E. Hinton, preparations of the Hydroids including the beautiful Sea Pen, all killed with the tentacles fully extended; Mr. W. B. Medland, pulsation in the heart of a snail; Mr J. B. Medland, a section of a Mole's jaw with teeth in *situ*, polarized. Among the other exhibits were those of Mr. C. S. Cooper who exhibited an almost complete herbarium of British wild flowers and leaves; the Lambeth Field Club, their collection of Mollusca; Mr. J. T. Carrington, land shells from the Riviera arranged so as to show variation. Messrs. C. H. and D. W. Collings, British and Australian birds eggs. Messrs. H. J. Turner and D. J. Rice, birds nests and eggs, the latter gentleman having a curious double nest of *Parus major*. Mr. J. A. Cooper, birds nest and eggs being much admired, one of the principal objects of this exhibit being to show the variation in different clutches of one species, this was particularly noticeable in those of the Red-backed Shrike.* Mr. Step, collection of living Mollusca was very interesting, comprising 40 species collected mainly in Surrey, and were shown in separate glass globes, each species being named.—H. W. BARKER and A. SHORT, *Hon. Secs.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.

May 9th.—The president, Mr. S. J. Capper, in the chair. Mr. Samuel Hoyle, of Sale, was elected a member. The Rev. H. H. Higgins, M. A., read a paper entitled, "Butterfly life before leaving the egg," in which, after describing the formation of the egg, he traced the gradual growth of the nucleus through the various stages until the tiny caterpillar was complete in all its parts and ready to leave the egg. The paper was illustrated by various eggs of lepidoptera shown under microscopes. Mr. Higgins also showed some Brazilian lepidoptera, and pointed out a strong case of mimicry. The president exhibited the rare *Crambus myellus* from Perth; Mr. Stott, a case of educational entomology, on behalf of Mr. Rigby, Natural History Museum, Nottingham, containing the life history of *eriogaster lanestris*; Mr. Jones, recently-bred lepidoptera, and a fine variety of *asphalia flavicornis*.—F. H PIERCE *Hon Sec.*, 143 Smithdown Lane, Liverpool.

BUTTERFLY LIFE BEFORE LEAVING THE EGG.†

BY REV. H. H. HIGGINS, M.A.

It might not be easy, on the spur of the moment, to select two small natural objects more unlike one another than a butterfly and its egg. Yet the life in the egg is the very same life which subsequently animates the winged and perfect form of the insect. There are certain phenomena in the life of a butterfly which might, on first thoughts, suggest that some of the stages between the egg and the perfect insect, end by a sort of leap; as when the chrysalis bursts open and the imago escapes. The suddenness is more apparent than real. Like the transformation scene in a pantomime, every part of the spectacle has been elaborately prepared, and is in its place waiting for the wave of the magic wand

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* See note on this exhibit on p. 124.

† Read before the Lancashire and Cheshire Entomological Society.

I must venture to detain you for a moment longer on this point. It is not merely that the wings, and the legs, and antennæ, have been rudely prefigured in the pupa: every spot and hair and scale have had their specialised antecedents in the chrysalis and in the larva; and I am now about to ask you to trace this wondrous development back still further, and to recognise within the egg, transformations fully as marvellous as any that occur after the tiny caterpillar has burst the shell.

To begin then with the fertilised egg. The whole insect with its peculiar characters is all virtually there. I do not say that life and food and warmth will not influence and modify the characters of the organs. As I once had the honour to shew you, *Araschnia levana* may take a *prorsa* form, but every spot has been modified upon a *levana* basis. Long inter-breeding or a lucky catch may give you a nearly white Garden Tiger, but it will be a Garden Tiger still; and all the artifices of the most skilful entomologist will never raise a Cream-spot from the egg of a Garden Tiger. It is, then, justifiable to say of the egg of a butterfly—the butterfly is virtually all there, down to its faintest marking. How much we can see of it with our best microscopes is another question. We will try to see a little of it presently.

But that wondrous something, imparted by the parents, which keeps the form true, whilst the egg differs in no essential character from the egg of a beetle, a crab, a snail, a fish, a bird, or a monkey—*that* we shall not see nor understand. What then shall we see? If we would see the first stage of a fertilised egg of a butterfly, we must be quick about it, for changes of great importance take place rapidly, and many stages occur before the butterfly lays its egg.

It is not essential for an egg to have a shell. Very convenient it may be, no doubt. But an egg may be truly an egg without it. Many eggs never have a hard shell; as in the case of animals that bring forth their young alive.

But let us suppose that we have the fertilised egg all right in its very first stage. What is it like? It is a small cell filled with a granular jelly-like substance, and somewhere in it there is a small spot—the nucleus. The granular parts are pabulum or food, and the jelly-like portion is protoplasm. Not, however, an example of protoplasm in general, there is no such thing. It is the highly specialized protoplasm of an individual form of life. And this protoplasm has already been very active. It has digested or assimilated at least a portion of a living cell from another insect, the male of the same species, and then got itself mixed with the protoplasm afforded by the mother butterfly, not in a confused condition, as if half digested; but in a most exact order, at present inscrutable to us, but on which depends whether the cell will produce a male or a female butterfly and other characteristics. The monkey and the elephant have been like that, in fact, there is no other way of beginning animal life. Plants grow from seeds or buds, and there is something very like budding in the lower animals, a long way below butterflies.

But, as a rule, the tiny cell with its jelly and spot, *that* is the beginning common to all animal life. Suppose our butterfly egg should make a mistake and hatch out a lobster. All that science can say, is, that it *never does* make a mistake. Not that science can shew the difference, in the first stage, between the egg of a butterfly and that of a lobster; structurally, under the highest powers of the microscope, they are the same, though one may be a little bigger than the other—I don't know if it be so.

Someone may say, "What about the egg of a bird?" The first stage has been passed through in the body of the bird long before the egg is laid. There is not so much difference in size, at starting, between the egg of a butterfly and that of the bird.

Now, then, I want you to see our butterfly egg when it is an indistinguishable member of the world of life. It has this invisible, inscrutable something, derived from its parents, that will keep it true to its form; that will not let the egg of a *Napi* come out a *Rapæ*. This hereditarily derived property is still a mystery. There is no reason why we should dislike to use this word "mystery"; nature has her mysteries, whether we blindfold ourselves so as not to see them, or whether we reverently try to find out, which is the better way. But it has one thing more, the most astonishing object of contemplation, except the Divine Being, that human thought can dwell upon. It is an individual! It is not either, or both, of its parents. Kill them, the egg may live; kill the egg, the parents may live. It is itself. Its life may be taken, but all the skill in the world cannot prolong its life for more than a year or two. It is as much an individual as is a man. Mountains and seas and rocks and clouds have not what this little cell of jelly has, periodicity and individuality. The prevalence of individuals of the same kind is an amazing thought; we speak of the countless kinds of living things; there may be, probably, a greater number of the same kind of animalcules in a summer pool of water, than there is of kinds of plants and animals in all the world.

Pres.
2 JUN. 92

EXCHANGE.

*Lepidoptera marked * are bred.*

Exchange.—Melanism and Melanochroism—I am working at this subject and will be obliged if any one who takes dark forms of Lepidoptera will communicate with me. I especially want information respecting those species that have assumed darker hues during recent years.—John E. Robson, Hartlepool.

Wanted.—Collectors to look through their duplicates for old, chipped, crippled, deformed, damaged and utterly useless Male Lepidoptera with bodies; will pay postage or endeavour to make a return,—F. N. Pierce, 143 Smithdown Lane, Liverpool.

Exchange.—Duplicates: Jacobæa, Carpini, Haworthii, Silago, Zonaria, Pilosaria, and many others. Desiderata:—Elpenor, A. urticæ, Versicolora, Papilionaria, and offers.—J. W. Baldwin, 472 Darwen Road, near Bolton, Lancashire.

Duplicates—Cardamines, Rhamni, Corydon, Paphia, Cardui, S. populi, Menthastri, Dispar Neustria, Vinula, Cæruleocephala, Ianthina, C. nigrum, N. rubi, Litura, Vaccinii, Satellitia, Cerago, Ferruginea, Chi, Oxyacanthæ, Meticulosa, Protea, Oleracea, Testacea, Nupta, Scutulata, Pilosaria, Illunaria, Elinguaria, Tiliaria, Pennaria, Miata, Prunaria, Maculata, Desiderata, very numerous, also ova, larvæ and pupæ.—W. E. Butler, Hayling House, Oxford road, Readings.

Duplicates—Fine well set Kent D. Galii, Sussex, Sphegiformis and Braemar Exulans, Desiderata—dark melanic forms or well marked. Mendica, Pilosaria, Abruptaria, Repandata, Crepuscularia, Biundularia, Clathrata, Ruberata, Rubiginata, Glareosa, Rumicis, &c., or C. ericellus, Myellus, Furcatellus. Only perfect examples sent or received.—W. H. Tugwell, 6 Lewisham road, Greenwich, S.E.

Exchange.—Wanted to exchange "The Naturalist," from August, 1884, to December, 1891, for "The Midland Naturalist," Conchological Books, or Shells.—W. A. Gain, Tuxford, Newark.

Desiderata.—A. prunaria, G. obscurata, E. heparata, L. flavicinclata, M. rubiginata, M. hastata, S. undulata, C. russata, immanata, and very many common species. I will endeavour to make a good return.—John E. Robson, Hartlepool.

Exchange.—Duplicate clutches of Sooty and Noddy Terns, Manx Shearwater, Mute Swan, Golden-winged Woodpecker, American Robin, Tits, Buntings, and others. Wanted other sorts of sideblown eggs with data, &c.—F. W. Paple, 62 Waterloo-street, Bolton.

Exchange.—Wanted, British Coleoptera and Lepidoptera, or books on Entomology, in exchange for Periodicals.—Thos. W. Wilshaw, 455 Shoreham-street, Sheffield.

Exchange.—Duplicates:—Hesperia lineola in good condition. Desiderata:—Hastata, Bajularia, Saponaria, Lunaria, &c.—F. Milton, 184 Stamford Hill, London, N.

Duplicates—British Coleoptera, a few Hemiptera and a few land and marine shells—Desiderata, Coleoptera, Lepidoptera, and other orders and named types of British and foreign shells.—A. Ford, Claremont House Upper Tower Road, St. Leonards-on-Sea, Sussex.

CHANGE OF ADDRESS.

Sidney J. Debac, *from* Isle of Mann, *to* Speedwell, St. Leonards on Sea.
P. W. Abbott, *from* Wylde Green, *to* Four Oaks, near Birmingham.

MEETINGS OF SOCIETIES.

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY 33 Finsbury Square, E.C. Meetings.—*Thursdays*. Fixtures: June 2nd and 16th.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge, S.E. Meetings second and fourth *Thursdays* in each month.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY, Free Library William Brown St., Liverpool. Next Meeting will be held on Monday, September 12th. Paper "Some further researches upon the Genital Structure of Lepidoptera," by F. N. Pierce, F.E.S.

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TO CORRESPONDENTS.

By reducing the leads between the lines, space equal to nearly three additional pages has been gained, without giving the Magazine the crowded appearance that is so painful to read.

A portrait of J. W. Douglas, F.E.S., is given with this month's Magazine, forming the fifth of a series of portraits of Naturalists of the Day. Other portraits are in rapid preparation.

Arrangements are now completed for continuing the Molluscan Section. W. A. Gain, Esq., of Tuxford, Newark, has kindly undertaken the Land and Fresh Water Mollusca, and Brocton Tomlin, Esq., of The Green, Llandaff, will attend to the Marine Section. Communications may be made to either of these gentlemen. All letters requiring a reply by post should contain stamp.

The Section for Coleoptera is conducted by G. A. Lewcock, Esq., 73, Oxford Road, Islington, to whom also direct communication may be made.

Mr. Lewcock also represents the Magazine in London, and will receive subscriptions, papers and notes for publication, &c., &c.

Subscriptions, exchanges, business correspondence, notes, papers for publication, and all other communications, to be addressed—JOHN E. ROBSON, HARTLEPOOL.

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THE

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next part of the "British Naturalist." If a reply by post be desired, a post-card or stamped envelope must be enclosed. Not more than twelve specimens will be named in one month for one subscriber.

All literary contributions in this section, Conchological works for review, and specimens to be named, should be sent direct to me at 3 Fairfax road, Bedford Park, London. All notices of exchange and subscriptions to Mr. Robson, at Hartlepool.

The writers of signed articles will be responsible for the opinions expressed therein. For all unsigned articles the responsibility will rest upon me.

THEO. D. A. COCKERELL.

The first transformation of the egg is the breaking up of the yolk into a cluster of little yolks. In this stage the insect resembles a ripe blackberry. It is still so small as to be quite invisible to the naked eye. What becomes of the white of the egg? What is called the white of the egg is merely food. It undergoes no changes, but simply nourishes the yolk, which is now like a cluster of small shot, or, as I said, a blackberry. Not yet is there any visible essential distinction between eggs of all kinds. The first transformation of the butterfly is the blackberry stage; so it is with the bird, and the rabbit, and the fish. What is the good of if?

Take to a jeweller a lump of turquoise stone, and tell him that you want a ring set all round with turquoises. He could do nothing with the lump, he must cut it into pieces in the proper way, and then he could put the pieces round the ring, and a very pretty ring it would be. What was the good of cutting the turquoise in pieces; To apply it to a practical use. Nature wants to do something with the jelly cell, so the jelly is cleft in little pieces which are left sticking together like the lobes of a blackberry, but quite ready to be arranged. This is called the morula stage, and I think that when you remember that, as a rule, this is a fact in the history of all animal life, you will admit that it is interesting.

The next stage is rather harder to describe.—We look again, the blackberry shape is gone, but we see the little pieces all arranged in beautiful order, covering the surface of a globe which is hollow, like an india-rubber ball, and contains a jelly-like substance. If now I take this india-rubber ball and squeeze it in on one side, I can form a cup, or something deeper like a horse-shoe, the sides of which are double. This is the third stage, and, as a rule, it is common to all animal life. The butterfly has passed through this form which is called the gastrula stage. The hollow represents the primitive stomach, and the opening the primitive mouth, and certainly all animals need a stomach and a mouth. We have not yet arrived at a stage which is plainly visible to the naked eye. The ordinary size of a gastrule form is less than half a millimetre in diameter, the size of a full-stop in ordinary print. Here, however, we have not only life but the simplest rudiment of animal form. The butterfly is actually coming into shape, and, more than this, it is giving the first visible signs that it is not going to come out as a monkey or a bird. Distinctive characters now set in by degrees, something special shews that the tiny embryo is not going to be an animal with bones, so the vertebrates are left behind. A little further a mark crops out that the embryo is not going to be a snail, so the snails are left behind; further on the embryo takes a turn that is never taken by the egg of a star-fish, so the star-fishes are left behind. Successively, points arise at which branch off the centipedes, then follows a station at which one may see the signboard—change here for spiders and scorpions; and then, at length, we shall be on the line of rail leading for insects only. Only! Why, half the kinds of living things in the world are insects. The little butterfly germ might yet take a wrong turn, or get into a wrong carriage and come out a grasshopper, or a beetle, or a bug, or a fly, or, almost safe at its journey's end, be after all a moth, and perhaps have to fly by night instead of in the sunshine. No fear, that wondrous virtue derived from its parents will preserve from all wanderings. Let me change the word "from," I am thankful to believe that I know whence it is originally from; but it is *through* the parents, and the parents, step by step, not one step missing or swerving, nor any change the result of chance.

Something like this is butterfly life before leaving the egg. Time has permitted me to explain only three stages. The fertilised egg which first appears as the cell with its jelly and spot, the blackberry stage, and the indented hollow ball stage. I would remind you that we could see something of a reason for the blackberry stage. I explained it by the operation of the turquoise cutter whose work was the result of the action of his mind. It was quite natural and reasonable, we could see something of the why; similarly of the next stage. And now, lastly, I would ask you to compare the dinted ball without any traces of a head or a tail, or of eyes or legs, with the tiny caterpillar as you first see it issue from the egg in your breeding cages, perfectly adapted for its habits of life. What a procession of transformations you must add to the first three, if you would reckon up all the transformations accomplished in the butterfly's egg. Nature sometimes makes the outside of the egg pretty, it is but the casket, the higher beauty is within.

THE SECONDARY SEXUAL CHARACTERS OF THE BRITISH COLEOPTERA.

BY JOHN W. ELLIS, M.B. (VIC.), F.E.S.

(Continued from page 115).

Structure.—By far the most interesting of the secondary sexual characters of the Coleoptera are the modifications which some of their organs and parts,—notably the mandibles, antennæ, legs, and the segments of the abdomen,—undergo, and a consideration of these characters will occupy a large share of attention in the present paper. First in anatomical order comes:—*The Head with its appendages*—eyes mandibles, palpi, and antennæ. In a great many beetles the head of the male is larger, and more especially broader, than that of the opposite sex, and as examples the following insects may be cited:—Many of the Staphylinidæ, as *Quedius cruentus*, *Velleius dilatatus*, *Creophilus maxillosus*, *Emus hirtus*, *Ocypus olens*, some *Philonthi (splendens*, *æneus*, *umbratilis*, *cephalotes*), and *Cafius xantholoma*, in all of which the larger head tends to become quadrangular, that of the female being oval or triangular-ovate; several *Steni*, notably *Stenus incanus*; *Oxyporus rufus;* some *Oxyteli; Anthophagus alpinus; Prognatha quadricornis;* some species of *Ips (quadripunctata)* and *Rhizophagus (depressus*, *nitidulus*, *dispar);* several members of the family Telephoridæ or soldier beetles, such as *Rhagonycha fulva*, *pallida*, and *elongata*, which also have the eyes more prominent in the male, most *Malthinus* and *Malthodes*, in which the broadened head is also strongly constricted behind into a neck; *Dolichosoma*, and *Dasytes*. But it is in *Lucanus cervus* that this portion of the body reaches its greatest development in British beetles, in order to support the enormous mandibles which are often more than half the length of the insect itself, and which from being curved, forked at the tip, and furnished with a strong antler-like tooth at about the middle of the inner side have caused the popular name "Stag-beetle" as well as the specific name *cervus* of Linnæus to be applied to this species. Specimens of the male are frequent in which the mandibles do not reach such great development, in which they are shorter, nearly straight, sharp and not forked at the apex, and with a tooth and some crenulations near the base on the inside, but in all cases these are very different from the small but very strong and sharp mandibles of the female, which, unlike those of the male, are capable of inflicting a very severe bite. Opinions differ as to the use of the enormously developed jaws of the male, but as they have been known in confinement to use them to crush fruit the probability is that in a state of nature they are used for such a purpose and for rasping the young bark off trees in order that they may feed upon the sap. In the allied species, *Dorcus parallelopipedus*, the head of the male is also larger than that of the female and is furnished with longer mandibles, each of which has a horn-like tooth (replaced by a blunt tubercle in the female) projecting from the middle. Contrary to the usual rule the head of the male *Apoderus coryli* is narrower than that of the female, and more contracted behind. Leaving for the present any further consideration of the mandibles we may notice that several species, more especially among the Brachelytra, have the heads of the males marked with a depression between the eyes; such is the case in *Homalota graminicola*, *occulta* and *linearis*; and while the female of *Homalota divisa* has the head (and thorax also) slightly hollowed, the male has these portions of the body deeply grooved longitudinally in the middle. In *Grypeta labilis* the head of the male only is impressed, while in the very closely allied *G. cœrulea* an impression is present in both sexes. The males of *Malachius æneus* and *bipustulatus*, and of several species of *Cis (boleti, e.g.)* have the head deeply and transversely impressed. In the males of several Scolyti the forehead is hollowed out and the surface clothed with pubescence, while in the females this portion of the head is smooth and convex. The males of several beetles bear upon their head horns of various degrees of development. The male of *Bythinus Curtisii* has a small-horn like tubercle in the middle of the clypeus; that of *Odontœus mobilicornis* has a long, curved, and (as the specific name indicates) moveable horn on the head, replaced in the female by two small prominences. In *Copris lunaris* the male is furnished with a long slightly curved horn, itself with a small tooth on each side of the base, while the female has a much shorter elevation, *notched at the apex*—a character which is never present in any of the males no matter how slightly the horn may be developed. The head of the male *Sinodendron cylindricum* bears a long recurved horn which is fringed with yellow hairs towards its apex, while the female has only a tubercle occupying the same situation. Many of the genus *Aphodius* have the front of the head (clypeus) furnished with three small conical elevations. These, and more especially the central one, are invariably more distinct in the male, and in the female they are sometimes absent altogether, sometimes replaced by a blunt elevation nearer the front margin of the head, and occasionally by a slight transverse elevation occupying the position of the male tubercles. In the species belonging to the genus *Onthophagus* we meet with a remarkable development of head-appendages. In the males the heads tend to become somewhat longer, even shovel-shaped *(nutans)*, the back of the head is raised in the form of a vertical plate or thin ridge, from the centre of which springs a long slender horn, often bent forward in the middle--(*nutans*, *cœnobita*, *fracticornis*, *nuchicornis*). In *vacca* the horn is straight, while in the rare *taurus* instead of a horn springing from the middle of the plate we have the two extremities of the plate developed into long curved horns like those of a Spanish ox. In *ovatus* alone of the British species a horn is absent in the male, the vertical plate or carina only being present. In the females of all the British species the head is furnished with two ridges, one occupying the position of the vertical plate of the male the other situated between this and the front of the head, but in *vacca* the hinder ridge presents a small tooth at each end. In the males of some *Bledii* (*taurus*, *spectabilis*, *tricornis*, *unicornis*, and *bicornis*) and in that sex of *Platystethus cornutus* the side of the head is elevated into a distinct horn or sharp prominence—replaced by a blunt tubercle in the female. In *Platystethus arenarius* the middle of the front of the head in the male is furnished with a small tooth, and the margin of the head is also toothed in *Micropeplus margaritæ* and *staphylinoides*. Many species of *Cis* (*boleti*, *villosulus*, *micans*, *nitidus*, &c.) have the front of the clypeus deeply notched in the male, and furnished with a blunt tooth at each side of the notch, while in the male *Cis bidentatus* the front of the clypeus bears two tubercles in the male; and in *C. bilamellatus* this portion of the head bears an upright plate in the male. The male of *Ennearthron fronticorne* bears two short horns on the clypeus, that of *E. affine* two minute horns, while that of *E. cornutum* has the front of the head furnished with two sharp teeth. The male *Clythra tridentata* has the front margin of the clypeus furnished with three shiny teeth, while in the female the clypeus is simply notched; the males of all the species in this genus have the mandibles elongate. In *Gnathocerus cornutus* the male has two short horns on the clypeus, and the mandibles are elongate and curved at the extremity, so as to project upwards like horns in front of the head.

(To be continued).

LIST OF LEPIDOPTERA OF ABERDEENSHIRE AND KINCARDINESHIRE

BY WM. REID, PITCAPLE.

(Continued from page 119.)

Euplexia lucipara.—A few years ago I used to take this species abundantly, now it is very rare.

Aplecta herbida.—Very rare, Fyvie, Haslehead,

Aplecta occulta—Widely distributed and not uncommon.

Aplecta tincta.—Abundant near Braemar, scarce at Banchory.

Hadena satura.—I have turned up several larvæ on Bennachie, from which I have as yet only bred one insect. Mr. Common, of Braco, captured a beautiful specimen at treacle several years ago, which has been referred by many eminent entomologists to this species or the next, it differed from my bred specimen, and I am now inclined to think it was a local variety of *exulis*.

Hadena assimilis (exulis).—See *H. satura*.

Hadena adusta.—Abundant everywhere.

Hadena protea.—Once at Inverurie, and once at Pitcaple, a large and very dark form.

Hadena glauca.—Widely distributed, generally rather scarce.

Hadena dentina.—Common everywhere.

Hadena chenopodii.—Local and rare (Lep. of Dee), rare near Pitcaple.

Hadena oleracea.—Common everywhere.

Hadena pisi.—Abundant, beautifully variegated forms are generally bred.

Hadena thalassina.—Local and generally rather scarce.

Hadena contigua.—Rare, Banchory.

Hadena rectilinea.—Abundant in many localities, uncertain in appearance, sometimes very scarce.

Cloantha solidaginis.—Abundant at Derncleugh, scarce elsewhere.

Calocampa vetusta.—Abundant everywhere.

Calocampa exoleta.—Not so common as the former species, and is almost a month later in appearing, very common in spring.

Xylina rhisolitha.—Mr. Connon has taken this species on Bennachie, it is very rare.

Cucullia umbratica.—Local, but not uncommon.

Heliothis scutosa.—Once at Bay of Nigg, by Mr. Duncan, (see "British Naturalist," Vol. I., p. 75).

Anarta melanopa.—Rare, Braemar (Dr. F. B. White).

Anarta cordigera.—Rare, Morroine Hill, Braemar (Dr. F. B. White.

Anarta myrtilli.—Common on all moors, larvæ on heath.

Brephos parthenias.—Rare, Braemar, Haslehead, &c. (Lepidoptera of Dee).

Abrostola urticæ.—Common everywhere, larvæ abundant on nettles.

Plusia chrysitis.—Generally common, larvæ not rare.

Plusia bractea.—Local and scarce, Echt, Peterhead, and several times at Muchalls.

Plusia festucæ.—Widely distributed, always scarce.

Plusia pulchrina.—Common everywhere, larvæ not scarce.

Plusia gamma.—Uncertain in appearance, sometimes very abundant.

Plusia interrogationis.—Local, but not scarce, larvæ *only* on heath.

Gonoptera libatrix.—Scarce everywhere.

Amphipyra trapopognis.—Widely distributed and common.

Mania typica.—Abundant

Stilbia anomola.—Abundant in many localities, larvæ common on grass in early spring, very easily reared.

Catocala fraxini.—Once at Cutler at sugar by Mr. Mundie and once at Derncleugh at sugar, in September, 1890 (see Entomologist, 1890, p. 170.

Euclidia mi.—Near Aberdeen (Zoologist 2401).

Euclidia glyphica.—Rare, two specimens from somewhere near Aberdeen (Lepidoptera of Dee).

Phytometra ænea.—Common in many places.

DELTOIDES.

Hypena proboscidalis.—An abundant species almost everywhere.

PYRALIDES.

Pyralis farinalis.—Local, very common in several places.

Aglossa pinguinalis.—Widely distributed and swarms in several localities, notably in some of the stables about Aberdeen.

Aglossa cuprealis.—Several have been captured near Pitcaple.

Pyrausta purpuralis.—Local but not uncommon, I have seen it in some numbers near Braemar.

Herbula cespitalis.—Local, occurs on the coast, near Braemar, and in several other localities.

Ennychia cingulalis.—Common at Linn of Quoich, Braemar (Prof. Trail's Lepidoptera of Dee).

Hydrocampa nymphæalis.—Local, abundant in several places.

Hydrocampa stagnalis.—Local, common in several localities (Scotston Moor, and River Doon near Aberdeen, Prof. Trail's Lepidoptera of Dee).

Botys verticalis.—Local, but not uncommon, Shettochsley (Mr. J. Rae).

Botys fuscalis.—Widely distributed and generally abundant.

Pionia forficalis.—Common almost everywhere.

Spilodes sticticalis.—Once near Aberdeen (Prof. Trail) (also recorded in Leach's British Pyralides).

Scopula alpinalis.—Local, occurs on nearly all tne mountains near Braemar, I have found it in grassy places over 2000 feet.

Scopula lutealis.—Abundant almost everywhere but not on the high mountains.

(**Scopula prunalis.**—This species is recorded from Inverurie, but I think in error).

Scopula ferrugalis.—Once on Scotston Moor, and once at Pitcaple.

Stenopteryx hybridalis.—Widely distributed but always very scarce.

Scoparia ambigualis.—Abundant everywhere.

Scoparia scotica.—Once near Old Aberdeen (Prof. Trail).

Scoparia dubitalis.—Abundant along the coast, rarer inland.
var. ingratella.—Occasionally (Mr. Horne).

Scoparia murana.—Widely distributed and not rare.

Scoparia lineola. Banks of the Don near its mouth (Zoologist 2403).

Scoparia cratægalis.—Common at Braemar, Inverurie, &c. (Prof. Trail). I have never succeeded in discovering this species.

Scoparia atomalis.—Common everywhere (Prof. Trail's Lepidoptera of Dee). Probably this species should be referred to *ambigualis*, I have not yet been able to turn up variety *atomalis* in either of the counties.

Scoparia angustea.—Two at Aberdeen (Mr. Horne)

Scoparia alpina.—Common or fairly common, in a few restricted localities near Braemar.

CRAMBITES.

Crambus falsellus.—See "Leach's British Pyralides," p. 74.

Crambus pratellus.—Abundant everywhere, smaller than southern specimens.

Crambus dumetellus.—Abundant on the banks of the Dee, and elsewhere near Braemar, also on the Links north of Aberdeen.

Crambus ericellus.—A few have been found on the mountains bordering on Perthshire and Forfarshire.

Crambus pascuellus.—Very rare, near Aberdeen and Peterhead (Prof. Trail). I have never taken this species myself.

Crambus furcatellus.—Exceedingly local. Prof. Trail records it as rather common on Little Craigendall, Bræmar, at 2500 feet. I have taken it on the Beinn A'Bhûird range, it also occurs on several of the mountains south of Braemar, but appears to be scarce, and is only found at from 2500 to over 3000 feet elevation.

Crambus margaritellus.—Local but not uncommon, Inverurie, Ben-na-chie, &c.

Crambus myellus.—Widely distributed but always scarce; on the links near Aberdeen, Muchalls, Banchory, Braemar, Fyvie, and in one or two localities in the Parish of Chapel of Garioch.

Crambus pinetellus.—Scarce, Fyvie and Benachie (Ben-na-chie).

Crambus tristellus.—Abundant everywhere and very variable.

Crambus culmellus.—Abundant everywhere.

Crambus hortuellus.—Scarce and local, Muchalls, Inverurie, Pitcaple, and near Fyvie.

Myelophila cribrella.—Has been taken on the Murcar Links near Aberdeen, by Mr. Horne.

Homœosoma nimbella.—Very local but not rare at Muchalls (Mr. Horne).

Phycis carbonariella (*Pempelia fusca*).—Common among heath, easily smoked out by day, comes to ragwort flowers at night.

Phycis abietella.—Widely distributed but always scarce, comes to ragwort flowers, the larvæ may be found feeding in fir shoots in spring.

Melia scociella.—Not uncommon but rather local.

(To be continued.)

THE HYMENOPTERA-ACULEATA OF LANCASHIRE & CHESHIRE,

BY WILLOUGHBY GARDNER, F.R.G.S.

(Continued from page 121.)

PROSOPIS.

The females of this genus excavate little tunnels in the stems of the bramble, wild rose, dock, &c., which they plaster inside, forming cells, as in Colletes. These insects are not usually gregarious; they are very partial to the flower of mignonette.

PROSOPIS, Fab.

communis, Nyl.—*annulata*, Kirb.—Hough End Clough, near Manchester, J.R.H.

signata, Panz.—Banks of the Mersey, near Manchester, J.R.H.

hyalinata, Sm.—*armillatus*, Nyl. Thoms.—Cheshire coast, B.C.

confusa, Nyl.—*punctulatissima*, Sm. ♂.—Rock Ferry, J.T.G.

pictipes, Nyl.—*varipes*, Sm.—Recorded from the Bollin valley, near Manchester, J.R.H.

SPHECODES.

These insects burrow in sandbanks; they are usually gregarious and sometimes form colonies in same bank with Halictus and Colletes.

SPHECODES, Latr.

gibbus, Linn.—Banks of the Mersey, near Manchester, J.R.H.; Rock Ferry, J.T.G.; fairly distributed, B.C.

subquadratus, Sm.—Very local; taken at burrows in a field near Chester, E.C.T.

pilifrons, Thoms.—*rufiventris*, Sm.—Southport and Hazelgrove, B.C.; Wallasey, about burrows of *Colletes cunicularia*, R.N.

epphippia, Linn.—Rainhill, H.H.H.; Bowden, B.C.; Chester, E.C.T.; Bebington, J.T.G.

HALICTUS.

The burrows of the members of this genus are excavated about five inches deep either in flat earth or in sandy banks; each burrow usually branches out into several smaller tunnels. The females often work at their burrows by moonlight. The various species are either gregarious, as *H. rubicundus* and *H. morio*, or burrow apart from their fellows.

Halictus, Latr.

rubicundus, Chr.—Generally distributed, B.C.; noted from Chorlton, near Manchester, J.R.H.; Rainhill, H.H.H.; Chester neighbourhood, E.C.T., R.N.; Rock Ferry, J.T.G.; and Wallasey, W.G.

leucozonius, Schr.—Marple, J.R.H., Oxton, near Birkenhead, J.T.G.; and described as generally distributed by B.C.

lævigatus, Kirb.—*lugubris*, Kirk. ♂.—This somewhat scarce species has been taken at Hazelgrove, B.C.; and Rock Ferry, J.T.G.

cylindricus, Fab.—*fulvocincta*, Kirb.—Commonly distributed, B.C. Noted particularly from Rainhill, H.H.H.; Didsbury, J.R.H.; Rock Ferry, J.T.G.; and Chester district, R.N.

albipes, Kirb.—*obovata*, Kirb.—Stretford, J.R.H.; Rainhill, H.H.H.; and Rock Ferry, J.T.G.

villosulus, Kirb.—*punctulatus*, Thoms.—Hazelgrove, B.C.; Rock Ferry, J.T.G.

atricornis, Sm.—This is another *special* bee of our district. The species, new to science, was discovered by the late Mr. Benjamin Cooke, at Hazlegrove, near Manchester, in July, 1866, and subsequently taken there in some numbers. See "Entomologist's Annual," 1870, p. 26. The insect has since been taken by Mr. J. R. Hardy, at Stretford near Manchester, and also by the Rev. F. D. Morice, M.A., at Whalley, near Clitheroe, so that it is possibly fairly distributed, and would reward careful search. It is very much like *H. minutus*, but is rather larger, and the males are said to appear about three weeks earlier.

minutus, Kirb.—Generally distributed, B.C.; Bollin and Chorlton, J.R.H.; Rainhill, H.H.H.; Rockferry, J.T.G.; and Wallasey, W.G.

nitidiusculus, Kirb.—Hazelgrove, B.C.; Dunham Park, near Manchester, J.R.H.; Rock Ferry, J.T.G.; and Chester, E.C.T.

minutissimus, Kirb.—Taken at Rainhill, H.H.H.; and Oxton, J.T.G.

tumulorum, Linn.—*flavipes*, Kirb., Sm.—Has occurred at Bowden, B.C.; and Rock Ferry, J.T.G.

Smeathmanellus, Kirb.—Several taken on ragwort at Delamere, R.N.

morio, Fab.—*æratus*, Kirb.—Hazelgrove, B.C.; and Lindow common, near Manchester, J.R.H.

leucopus, Kirb.—Taken frequently at Chester, E.C.T.

(To be continued).

Reports of Societies.

ENTOMOLOGICAL SOCIETY OF LONDON.

June 1st, 1892.—R. McLachlan, Esq., F.R.S., Treasurer, in the chair. The Hon. Walter Rothchild sent for exhibition *Neptis mimetica*, n.s., from Timor, mimicking *Andasena orope*, one of the Euplœidæ, and *Cynthia equicolor*, n.s., a species remarkable for the similarity of the two sexes, from the same locality; also a hybrid between *Saturnia carpini* and *S. pyri.* and specimens of *Callimorpha dominula*, var. *romanovii*, var. *italica*, and var. *donna*, bred by a collector at Zurich; he further exhibited a very large and interesting collection of Rhopalocera made by Mr. W. Doherty in Timor, Pura, Sumba, and other islands, during October and November, 1891. Col. Swinhoe remarked that the various species of *Neptis* were usually protected and imitated by other insects, and did not themselves mimic anything, and that the pattern of the *Neptis* in question was very common among the butterflies in the Timor group. Mr. Jenner Weir, Prof. Meldola, Mr. Trimen, and others continued the discussion. Mons. A. Wailly exhibited about fifty species of Australian Lepidoptera, mostly from Queensland, and fertile ova of *Trilocha varians*, which are arranged in small square cells, fastened together in large numbers, and present an appearance quite different from the usual type of Lepidopterous ova. Mr. F. Merrifield exhibited a series of *Drepana falcataria*, half of which has been exposed for a week or two, in March or April, to a temperature of about 77 degrees, and the other half has been allowed to emerge at the natural out-door temperature. The latter insects were in all cases darker than the former, all being equally healthy. Mr. McLachlan, Mr. Barrett, Mr. Jenner Weir, and others took part in the discussion which followed. Mr. C. G. Barrett exhibited a curious variety of the male of *Arctia mendica*, bred by the Rev. W. F. Johnson, of Armagh. Canon Fowler exhibited the egg-case of a species of Mantidæ from Lake Nyassa, and specimens of *Bledius dissimilis*, Er., from Bridlington Quay, Yorkshire. Mr. McLachlan called attention to the re-appearance in large numbers of the Diamond-back Moth, *Plutella cruciferarum*, which is very abundant in gardens near London, and expressed his opinion that the moths had been bred in the country and had not immigrated. Mr. Jenner Weir, Mr. Bower, and Prof. Meldola stated that they had recently seen specimens of *Colias edusa* in different localities near London. Mr. Jenner Weir and others also commented on the large immigration of *Plusia gamma*, and also on the appearance of a large number of *Cynthia cardui* and other Vanessidæ. The Hon. Walter Rothschild communicated a paper on two new species of *Pseudacræa*.—W. W. Fowler, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

26th May.—C. G. Barrett, Esq., F.E.S., President, in the chair. Mr. Jenner Weir exhibited a specimen of *Anosia plexippus*, L., var. *erippus*, Cramer, which Mr. Weir remarked had been obtained by one of the employees of Captain Parke in the Falkland Islands, until this insect was captured the only butterfly known in these islands was *Brenthis cytheris*, during Captain Parke's residence in the islands he had never seen there a specimen of the *Anosia* in question, it therefore appeared that like its northern representative, the true *Anosia plexippus*, the southern form had the migratory habit similarly developed. Mr.. Hawes exhibited and contributed a note on a series of *Pieris napi*, bred from ova laid by parent insect taken near Bentley, Suffolk, June 10th, 1891, that seven males and female imagines appearing from 21st to 31st July, the remainder of the brood stood over until the spring and emerged between the 6th and 20th of May. Mr. Hawes suggested that the cool summer of last year affected the pupa to such an extent as to retard three-fifths of the brood. Mr. Jenner Weir said this was the most interesting exhibition he had ever seen on this subject, the two forms of the species, viz.:—the summer and spring emergences having both appeared from a single brood reared under exactly similar circumstances, Mr. Frohawk, a pupa of *Argynnis paphia*, and made some observations as to the time occupied in the pupal change, he also suggested that the brilliant metallic markings mimicked a dew drop on a dead leaf. Mr. Tugwell's specimens recently taken by him at Tilgate Forest including *Syricthus malvæ*, approaching the var. *taras*, Meig., *Thanaos tages* showing variation varieties of *Argynnis euphrosyne*; also an extremely pale variety of *Anisopteryx æsculi*, taken by Mr Hann, of Redding Mr. R. Adkin, a bred series of *Petasia nubeculosa*, and remarked on the species remaining in pupa for two or three years, those now exhibited having pupated in 1890. Mr. Tugwell stated he had bred them the first season. Mr. Hill, *Tæniocampa gothica*, and var. *gothicina* from Rannock. Mr. Carpenter an example of *Vanessa antiopa*, taken on Tooting Common some few years back. Mr. Adkin called attention to the unusual abundance of *Plusia gamma*, on the last few evenings. Messrs. Dobson, J. A. Cooper, Frohawk, Adye, Winkley, Tutt, and Barrett also made some observations thereon. Mr. Jenner Weir delivered a Zoological lecture in which he drew attention to some remarkable cases in which Mammalia and Birds having been in remote geological times differentiated for one mode of life, had adopted entirely different habits.—H. W. Barker, Hon. Sec.

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

Thursday, June 2nd.—Exhibits.—Lepidoptera: Mr. Battley, a box of Lepidoptera from Southend, Essex, including *Lycæna argiolus*, a dwarf form of *Anthocharis cardamines*, *Aleucis pictaria*, *Tæniocampa gracilis*, *Acronycta rumicis*, *Hadena genistæ*, &c. Mr. Clark, a series of *Anticlea badiata* from Epping Forest. Mr. Tremayne, *Platypteryx unguicula*, *Corycia temerata*, and *Ephyra trilinearia* from Epping Forest. Dr. Buckell, living larvæ of *Amphipyra pyramidea* and *Cosmia trapezina*. Mr. Smith, *Halias prasinana*, *Demas coryli* and *Odontopera bidentata*. Mr. Bayne, a series of *Tæniocampa munda* from Epping Forest, and a specimen of *T. stabilis* with the wings on one side brown, and partly grey on the other. Mr Bacot, a bred series of *Spilosoma mendica*. Mr. Southey, *Tæniocampa gracilis* and *T. rubricosa* from Hampstead. He also exhibited two species of *Noctuæ* bred from tomatoes imported from Italy, and a specimen of a *Bombyx* found in a barrel of foreign apples. Coleoptera.—Mr. Heasler, *Philydrus melanocephalus* from Mitcham. Mr. Beck, *Cicindela sylvatica* and *Lina populi* from Aldershot, *Cassida oblonga* from Freshwater, *Onthophagus ovatus* from

Bonchurch, and *Silpha littoralis* taken under a dead hedgehog. Mr. Bayne mentioned that *Lithosia aureola* was now fairly plentiful at Chingford, and that other species abounded. Mr. Tremayne stated that insects were very abundant at West Wickham, while Mr. Prout recorded *Stauropus fagi* and *Notodonta trepida* from the same locality.

Thursday, June 16th.—Exhibits:—Lepidoptera—Dr. Buckell, a peculiar dark coloured var. of *Lophopteryx camelina* bred from a pupa taken in Epping Forest, also a female of *Hepialus lupulinus*, ovipositing, the ova being merely dropped, and possessing no adhesive property. Mr. Huckett, a specimen of *Stauropus fagi* from Monks Wood, Epping Forest, and examples of the summer brood of *Selenia illunaria*. Mr. Tremayne, specimens of *Stauropus fagi*, *Notodonta dodonæa* and *Lithosia aureola*, taken in the New Forest at Whitsuntide. Mr. Smith, some prettily marked forms of *Hadena pisi* from the Lake District, and a series of *Nemeobius lucina* from the New Forest. Mr. Fox, a long and variable series of *Spilosoma menthastri*. Mr. Bayne, a pupa of *Halias quercana*, and a variable series of *Strenia clathrata*. Mr. Battley, *Lithosia aureola*, *Brephos parthenias*, *Nyssia hispidaria* and *Eurymene dolobraria*, all taken in Epping Forest this season. He also exhibited a specimen of *Diphthera orion*, taken on sugar in the New Forest, and recorded the capture of nine more examples of this species, two *Stauropus fagi*, and a full fed larva of *Apatura iris*. Mr. Nicholson, bred specimens of *Boarmia cinctaria* and living larvæ of the same species. These larvæ were of a bright green colour, and not brown as stated by Newman. He also mentioned that the larvæ feed freely on sallow—a fact which he believed to be unrecorded. Mr. Simes, living larvæ of *Bombyx castrensis* from Shoebury. Mr. Clark a series of *Gelechia atriplicella* from the Hackney marshes. Mr. Milton, a series of *Melanippe hastata* from Stornaway, with southern forms for comparison. He also exhibited in Coleoptera, specimens of *Philonthus splendens*, and in Hymenoptera series of the males, females and neuters of *Bombus hortorius* and *B. lapidarius*.—A. U. BATTLEY and J. A SIMES, *Hon. Secs.*

General Notes.

MICRO-LARVÆ FOR THE MONTH.—July is a busy season for larvæ, and during the earlier part we get many species that ought to have been taken last month, but the cold easterly winds we occasionally get at that time cause many to feed very slowly, but the warm weather we now have causes them to feed up and disappear. Searching for these and the many species that ought now to be taken, we find our time fully occupied, the weather also is at times very hot and sultry, so that it requires a little resolution to keep as constantly at work as we should do. In elm hedges we may now obtain the larva of *R. formosella* by searching and beating, and from oak the pretty larva of *H. prasinana*, while that of *P. hastiana* will be found in the terminal shoots of dwarf sallows, particularly those growing in the hollows of sand hills. In damp marshy places, where the meadow sweet is growing, the larva of *P. aspersana* and *shepherdana* may now be found screwing up the tops, and in the shoots of Bryony *(Briona dioica)* which is now fast spreading itself over the hedges, the larva of *P. rugosana* will be found causing them to curl over into a cell-shaped mass; *P. immundana* is now rolling up the leaves of alder, and *S*, *euphorbiana* larva is now busy eating its way down the shoots of *Euphorbia paralias*, which plant is generally found growing on the broken ground of undercliffs; *S. nævana* is now plentiful in the shoots of holly; *T. mediana* in seeds of various umbelliferæ, and in the seeds of cowslip, the larva of *E. ciliana*. In drawn together leaves of hawthorn will be found the larva of *S. pyrella*, *Dep. costosella* in the flowers of furze, and towards the end of the month the larva of *D. nervosella* in turned down leaves of *Œnanthe crocata* growing in wet places, and the larva of *Gel. inopella* and *A. granitella* in the flower heads and shoots of *Inula dysenterica*. The larva of *Gel. hippophaella* is busy screwing up the terminal shoots of *Hippophae rhamnoides*, and in thistle leaves the larva of *Gel. acuminatella* is now to be seen giving them quite a bleached appearance, the larva of *G. costella* is mining the leaves of *Solanum dulcamara*, which some of them have now left, and are busy boring down the stems of the terminal shoots. Among the seeds of the chenopodium the larva of *G. atriplicella* will be found in a tubular gallery. The maple leaves are now being rolled by the larva of *Grac. semifasciella* and the alder leaves by those of *G. elongella*; in leaves of plantain the larva of *G. tringipennella* may still be found, and in bladdery mines on leaves of *Artemesia vulgaris*, the larva of *Grac. omissella*. The leaves of nut are now being turned down by the larva of *O. avellanella*, those of the hawthorn by the larva of *O. anglicella*, and in birch leaves the larva of *O. betulæ* will be found feeding in a similar manner, the cases of *Col. troglodytella* can now be found on the under side of leaves of *Inula dysenterica*, and those *Col. limosipennella* on elm leaves in hedges, and *Col. siccifoliella* on leaves of hawthorn. In the shoots of *Epilobium hirsutum* the larva of *L. fulvescens* is now feeding, and in the leaves of *E. angustifolium* the larva of *L. raschkiella*, in the leaves of dogwood the larva of the beautiful *A. pfeifferella* is now feeding, and will soon be cutting out their oval cases, the leaves of *Poa aquatica* should now be examined for the larva *Elac. poæella*, and those of the reed for the larva of *Elac. cerusella*. There is plenty to do among the larvæ of the *Lithocolletidæ*, the larva of most of which are now feeding, but as these can be taken in the autumn they are best left till then, which will give us more time to attend to those species only occurring this month, of which plenty are to be found, especially in rough uncultivated and unfrequented places.—G. Elisha, Shepherdess Walk, London.

Aporia Cratægi.—It does not at all follow that the record of any rarity *must* be made in one or all of the Entomological Magazines to be received and afterwards quoted as an authority. Yet I constantly see specimens ignored that have not been thus placed before entomological eyes although well-known to have been captured honestly. I think my friend, Mr. C. A. Briggs in his desire to call attention to his nephew having taken this now rare insect has forgotten the fact (which I have at *least mentioned to him*) that *A. cratægi* is *annually* taken in small number at or near Sandwich. It is quite true that Mr. Tutt gave 1887 as having been authenticated by me but fully twenty were then taken in one locality whereas in 1888, Mr. Briggs' was a solitary specimen which had probably wandered from their present location. It may well be that Mr. Tutt being perfectly conversant with the fact, gave only the year vouched for, without mentioning the annual occurrences.—SIDNEY WEBB, Dover.

SYMPETRUM FONSCOLOMBII IN SURREY.—My brother and I discovered this species sparingly at a pond in Surrey and secured a few examples on the 8th inst. There were only four British specimens of this very rare Dragon fly previously known; one ♀ in Mr. Stephens, collection in the British Museum, one ♂ in Mr. Mclachlan's collection from Mr. Desvignes collection, another ♂ taken by Mr. Hall at Dover in 1881, and a fourth mentioned in Mr. Bath's handbook of Dragon Flies, but I cannot find the reference.—C. A. BRIGGS, 55, Lincoln's Inn, London.

[Mr. Bath only mentions three specimens "one each near London and Deal, and a third at Exmouth, the latter was exhibited at a meeting of the Entomological Society of London in 1887." Perhaps this Exmouth specimen is the fourth named by Mr. Briggs, as that he mentions from Dover is omitted by Mr. Bath.—Ed., B.N.]

PAIRING OF HEPIALUS HUMULI.—I went out the other evening to take a ♀ *Humuli*, with a view to eggs and newly-hatched larvæ, and saw one approach a ♂ in the way you are familiar with. It was, however, so light that I noted that the ♀ settled on a grass stem and the ♂ by her, then he got in front and paired instantly. For some ten seconds his wings were closed, then with a quivering flutter he threw himself off, hanging on merely by the ♀. The meadow had been grazed and was bare except some patches and bents. A few yards further on I saw two more pairs hanging in the same fashion, the end of the costa of the wings of the ♂ being against the hind margin of the ♀. I carried these home by cutting the grass stems, thinking to get fertile ♀'s this way easily, and so it proved; they carried easily and remained paired at least 2½ hours, but were separate and some eggs laid in the morning. The grand brush on the hind leg of the ♂ suggests that he attracts by scent as well as by sight, and the approach of the female, from the time her attention is drawn till she is very near, suggests following a scent rather than sight—that is, it is to and fro for several zigzags. In further confirmation of this, it is to be observed that the ♂ always faces the wind, and that the ♀ always comes up behind him. This would be in the line of scent, and also, of course, displays the white of wings most. There is little doubt that, with few exceptions, all virgin ♀'s emit an odour for the attraction of the ♂, but I do not think anyone has recorded smelling this odour. The case in question, however, is a ♂ odour to attract the ♀, which I think probably exists in *humuli*, as in *hectus*. This is a rare case, so far as records go. Most odours that can be detected are, either in both sexes for benefit from enemies, or in ♂, not to attract ♀, but to charm her after he has been attracted. This is much the most common in butterflies. From what I have seen of courtship in butterflies, I believe the ♀ attracts the ♂ by sight (as well as scent) and then has to be "charmed" by the ♂, both by display of colour, and by a special scent—varying, of course, in different species.—T. A. CHAPMAN, Firbank, Hereford.

LARVÆ DESTROYED BY MICE.—A few days ago I had about 130 larvæ of *Bhirtaria* in a large cage, and now they are reduced to 6, eaten by mice. They had made a hole through the gauze or leno which covered a part of the cage. Recently they have eaten many valuable imagines of mine, but I did not suspect them of eating larvæ. —F. MILTON, Stamford Hill.

Coleoptera.—Notes.

SILPHA LITTORALIS.—On Saturday, May 21st, I took a very nice specimen of this beetle under a dead hedgehog at Mottisfont, near Romsey.—R. BECK, Burnside, Southampton.

GEOTRUPES PYRENÆUS.—I captured a single specimen of this dung beetle flying in the hot sunshine on May 26th. I have not seen it since August, 1890, when I took one at Swanage.—ID.

CICINDELA SYLVATICA.—Being in the neighbourhood of Aldershot to-day (May 26th) I again paid a visit to North Camp in search of this beetle and was rewarded by capturing twelve in excellent condition. This time I took a sweep net with me and found it easier to transfer them from it to the killing bottle than from the butterfly net with which I took the specimens in September, 1890. I again noticed that this insect confined itself to an area of about fifty square yards and although I walked a quarter of a mile from all four sides I did not meet with a single specimen.—ID.

CAPTURES AT WEST WICKHAM.—On Saturday, June 11th, I paid a visit to Mr. Chaney, and during the afternoon went with him to West Wickham. Insects were not common, but I managed to net several *Aphthona venustula*, *Hermæophaga mercurialis*, *Strangalia melanura*, &c. Also, by beating birch, hazel, and oak, *Rhynchites megacephalus*, *R. nanus*, *Polydrosus undatus*, *Cryptocephalus fulcratus*, &c. —G. A. LEWCOCK, 73, Oxford Road, N.

POLYDROSUS MICANS.—On June 11th, I was fortunate in getting four specimens of this good weevil at West Wickham. Three were beaten from birch, and one from hazel. My friend, Mr. Chaney also has taken the species this year. —Id.

Pachyta collaris.—I found several specimens of this insect during a recent visit to Farnham, Surrey. The species is said to abound in hop grounds, its habitat being in the poles. Mine were obtained, as usual, from Umbelliferæ.—Id.

Mollusca.—Notes.

Notes on Varieties.—Mr. Taylor has published some extremely valuable papers on "The Variation of the Mollusca" in a recent volume of the *Journal of Conchology*, from which I will quote those parts dealing with the *causes* of variation, to which I shall add corroborative facts and opinions deduced from them by other writers. I particularly wish to call attention to the following: "Environment is the most powerful and perhaps the only force inducing variation, or rather fostering those variations which are most in accordance with the surrounding conditions . . . we are, however, often unable to recognise the cause of many modifications, but it is patent that no change occurs without a reason and no effect without a cause. We must in those cases store away facts and observations to which we may hope sooner or later to find the key." *Supply of Lime*:—Deficiency of lime doubtless leads to the production of very thin, fragile, and horny shells. A striking instance is seen in the remarkably delicate form of *H. aspersa*, which is plentiful in some parts of Guernsey. Clessin points out that the results of this deficiency are also observable in the *form* of some shells, thus, he states that the *Clausiliæ* have their shells shorter than usual, and that *H. lapicida* becomes somewhat rounded on the periphery. Peat moors, on account of the absence of lime, produce dwarfed and fragile shells. It is remarked that among fresh-water shells, some species, like *U. margaritiferus* and *Neritina*, seem to have a superior power of withdrawing lime from the water, producing solid shells in granitic regions, while *Ancilus*, in the same water is said to be remarkable for unusual thinness and delicacy. Dr. Jeffrys says, of the *Pisidia*, "Size, substance, sculpture, and lustre . . . mainly depend on the chemical ingredients of the water inhabited by the molluscs, as well as their supply of food." In 1885, I took a large quantity of Anodons and Unios of extraordinary size from the bed of a lake from which the water had been drained. On examination of the water after it had been again allowed to fill its former basin, I found it contained 16.2 grains of CaO per gallon, this is equal to nearly 29 grains of carbonate of lime, probably however, a considerable proportion of this lime was in the form of sulphate, derived from the gypsum of the district. Herr Julius Hazay states that he has verified by actual experiment that *L. peregra* and *L. ovata* (*L. peregra* var. *ovata*) may be produced at will by simply placing the ova under suitable conditions, typical *peregra* is produced from the ova of *ovata* if placed in hard running water, and *ovata* from the ova of *peregra* by an opposite treatment. *Deficiency of Moisture.*--Dry regions are tenanted mainly by mollusks with thick and uniformly coloured dull-white shells. The Rev. Canon Tristram remarks that the shells found in the Sahara are much thicker than those of the same species in more temperate parts, and he is disposed to regard this modification as a means of preventing evaporation in so dry a climate, the white shell is considered desirable as absorbing the least possible amount of heat. Mr. Taylor remarks that the uniformly dull white specimens of *H. ericitorum*, *H. virgata*, &c. in our own country agree with the desert forms in being thicker than usual, and quotes a remark of Strobel, that in Moravia the thick uniformly white variety of *H. virgata* is exclusively found on the open cultivated lands, and attributed their peculiarities to dryness and warmth. M. Morch, writing on the land shells of the Nicobars, mentions that in almost all the species, two forms, a larger and a smaller have been met with, and that the larger was found by the old collectors, whilst the smaller occurs now, he attributes this to a diminution in the humidity of the climate. *Abundant Moisture*, according to Herr Dietz, prevents the formation of coloured bands in *H. hortensis*, and as the result of his observations, says that the albino specimens are more common in wet years, and that the specimens with coloured bands have the growth of the last wet year not coloured. *Light.*—The absence of light appears to favour, in those species which habitually live in shade and retirement, the production of shells having a uniform but obscure colour, largely composed of animal matter, and often provided with hairs and other epidermic appendages, *H. aculeata*, *H. hispida*, *H. obvoluta*, *B. montanus*, *B. obscurus* and the forest-loving American *Helices* are quoted as examples. "Arboreal species, which are almost necessarily exposed to the full action of air and light, are distinguished by brighter, more vivid, and more varied colouration, than the purely terrestrial species loving shade and concealment. Our variegated *Helices*—*nemoralis* and *hortensis* approach perhaps nearer in habit to arboreal life, living freely exposed on hedges and hedgebanks, and these species are the most gaily coloured of our native shells." *Heat*—as already mentioned when accompanied with dryness produces a white or whitish shell, but when combined with moisture and rich vegetation it produces some of the most richly coloured and finest shells known. *H. pisana* in sunny places has the mouth tinged with rose colour which is said to be deficient in less favoured spots. On fresh-water species the effect of too great heat produces a frail, delicate and dwarfed shell, and extreme cold produces the same effect. *L. peregra* var. *thermalis* which lives in water said to reach 95° F., and the var. *glacialis* living in water but little removed from the freezing point even in summer, both exhibit these characteristics. The Rev. W. C. Hey states that the warm water discharged into the river Foss caused the Anodons at that part to be more delicate and larger than elsewhere, "exemplifying the genial effect of" (moderate) "heat upon forms of life." Among the slugs, melanism is stated to be effected by extreme cold. Herr Simroth has shown that this character is developed in *A. ater* by cold, and redness by warmth, as seen in *A. rufus*, a common variety on the continent. *L. arborum*, says Mr. Taylor, "gives similar testimony in the north-western parts of this country . . . on the Italian mountains the transition from the ordinary to the intensely dark form can be traced."—W. A. GAIN.

THE GENUS RISSOA—(continued)—*Sub-genus Manzonia*, Brus. Jeffreys in his report on the "Lightning" and "Porcupine" expeditions proposes a genus * *Flemingia* for the two species—*R. costata* and *R. zetlandica*—which we are about to consider. Either this becomes a synonym of the earlier *Manzonia* described by Brusina in the "Journal de Conchyliologie" for 1868, or may be retained for the latter species by the strictest systematists who prefer to group this shell separately. The two species however seem to fall naturally together, as in Jeffrey's group B, by the thickening or doubling of their outer lip (called the peristome), which forms a complete and slightly raised rim round the mouth. Both species give one the impression of being twisted aside and form a very distinct little group. †Tryon assigns it eight species—all European; this is probably far too large a number, as besides our two representatives only two others seem to have been assigned to § *Manzonia*, both from ‡Madeira. *Rissoa zetlandica*, Mtg. is a scarce shell, mostly found in dredgings though I have taken it dead on the shell-beach at Herm amongst the myriads of *R. cancellata*. It may be distinguished from this and all other species by being turreted—almost scalariform—in shape, with a produced spire and a light clear yellow colour if fairly fresh. The shell is strongly sculptured with ribs across and lengthwise at right angles, forming square pits, while the ribs towards the point of the shell gradually dwindle down to mere striæ. The distinguishing features to look for are the turreted whorls with their strong concellation and deep suture, the double or reflected outer lip, and the oblique twist given to the last whorl and aperture. Anyone collecting in the Channel Isles should look out for it at Herm but it is certainly a deep-water species in habitat, and occurs right up to the Shetlands. No variation seems to occur except in size (from 3 to 5 mm.) *R. costata Adams* is by no means an uncommon shell, dead, among the ordinary shore drift and especially in dredgings, but scarce to get alive. It will at once catch the eye amongst a lot of small shells by its dead-white colour, and the very prominent, revolving, sharply-cut, longitudinal (*i.e.* in the direction of the length of the shell) ribs, which are wide apart and number nine on the body-whorl. The same features are presented as in *R. zetlandica* with regard to the peristome and oblique twist of the last whorl: the exact effect of this twist it is difficult to describe, but it can be most clearly perceived by laying the shell for examination with the plane of the aperture at right angles to that of the table or other surface. Round the base of the shell runs a strong keel, cutting off the ribs before they reach the edge. Most of the shell is covered with striæ, running with the growth of the shell, hardly noticeable to the naked eye. The length seems pretty constant at 3 mm., though Monterosato characterises two form varieties as var. *major* and var. *minor*. There is no other variation.—B. Tomlin, Llandaff.

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* P.Z.S., 1884, p. 116. † Struct. and Syst., Conch. II., 263. ‡ P.Z.S., 1873, p. 371.

NATURALISTS OF THE DAY.

VI.—The Late JAMES CHARLES DALE,

M.A., F.Z.S., F.C.P.S., ETC.

James Charles Dale, of Glanvilles Wootton, in the county of Dorset, was born in the year 1791. He was sent at an early age to Wimborne Greene School, and afterward to a private tutor at Enborne, in Berkshire. He took his first degree at Cambridge in 1815, and became M.A. in 1818. In the same year he became a Fellow of the Linnæan Society, and compounded for his annual subscription. His mother, who was born in 1768, was a daughter of Stephen Barton, whose mother was a sister and co-heir of the celebrated Sir Isaac Newton. Stephen Barton's sister married John Wallop, 1st Earl of Portsmouth. Mr. Dale commenced a journal in 1808, which is the most continuous diary in existence, the last entry being dated February 6th, 1872, the last day of his life. Some butterflies he took when at school are still in his son's possession. In 1825, he, in conjunction with John Curtis, made an expedition to Perthshire and added no less than thirty species to the British list. Many now are considered common, but in those days entomologists were not in the habit of going on expeditions beyond the environs of London. It is in connection with John Curtis that the name of J. C. Dale will be handed down to posterity. In the "British Entomology" his name is on almost every page, and it was from his collection that Curtis derived a vast portion of the material from which his elaborate work was drawn up. He also assisted Curtis with specimens, information, and the money to carry on his work. The Dalean collection is therefore of importance to enable the student to verify Curtisian species.

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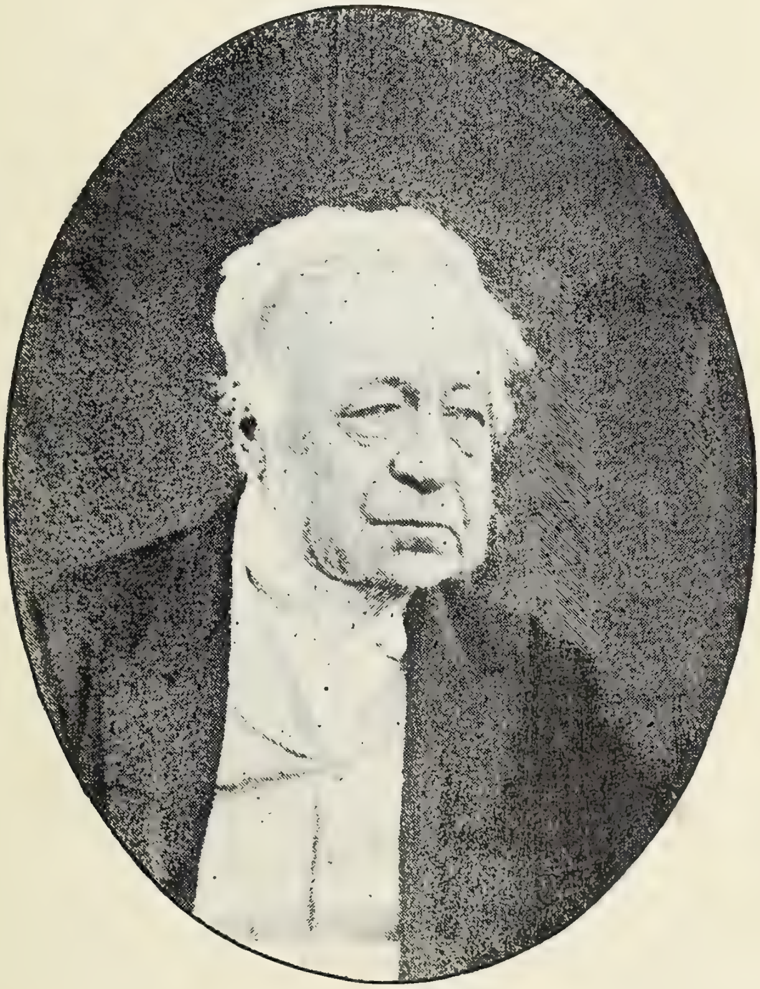

THE LATE JAMES CHARLES DALE,

M.A., F.Z.S., F.C.P.S., ETC.

BRITISH MUSEUM
NATURAL HISTORY.

EXCHANGE.

*Lepidoptera marked * are bred.*

EXCHANGE.—Desiderata: Sinapis, T. rubi, W. album, Pruni, Agestis (South of England), Ægon ♀, Iris, Polychloros, Cinxia, Adippe, Paphia, Epiphron, Ægeria, Megæra, Hyperanthus, Tages, Actæon, Paniscus, and all the clearwings but Tipuliformis.—JOHN E. ROBSON, Hartlepool.

EXCHANGE.—Duplicates: T. biundularia, T. punctulata, T. gothica, T. stabilis, C. trapezina. Desiderata: Very numerous including ova of many species.—W. HEWETT, 12, Howard Street, York.

EXCHANGE.—Melanism and Melanochroism.—I am working at this subject and will be obliged if any one who takes dark forms of Lepidoptera will communicate with me. I especially want information respecting those species that have assumed darker hues during recent years.—JOHN E. ROBSON, Hartlepool.

WANTED.—Collectors to look through their duplicates for old, chipped, crippled, deformed, damaged and utterly useless Male Lepidoptera with bodies; will pay postage or endeavour to make a return.—F. N. PIERCE, 143 Smithdown Lane, Liverpool.

EXCHANGE.—Duplicates: Jacobææ, Carpini, Haworthii, Silago, Zonaria, Pilosaria, and many others. Desiderata:—Elpenor, A. urticæ, Versicolora, Papilionaria, and offers.—J. W. BALDWIN, 472 Darwen Road, near Bolton, Lancashire.

DUPLICATES—Cardamines, Rhamni, Corydon, Paphia, Cardui, S. populi, Menthastri, Dispar Neustria, Vinula, Cæruleocephala, Ianthina, C. nigrum, N. rubi, Litura, Vaccinii, Satellitia, Cerago, Ferruginea, Chi, Oxyacanthæ, Meticulosa, Protea, Oleracea, Testacea, Nupta, Scutulata, Pilosaria, Illunaria, Elinguaria, Tiliaria, Pennaria, Miata, Prunaria, Maculata, Desiderata, very numerous, also ova, larvæ and pupæ.—W. E. BUTLER, Hayling House, Oxford road, Reading.

DUPLICATES—Fine well set Kent D. Galii, Sussex, Sphegiformis and Braemar Exulans, Desiderata—dark melanic forms or well marked. Mendica, Pilosaria, Abruptaria, Repandata, Crepuscularia, Biundularia, Clathrata, Ruberata, Rubiginata, Glareosa, Rumicis, &c., or C. ericellus, Myellus, Furcatellus. Only perfect examples sent or received.—W. H. TUGWELL, 6 Lewisham road, Greenwich, S.E.

EXCHANGE.—Wanted to exchange "The Naturalist," from August, 1884, to December, 1891, for "The Midland Naturalist," Conchological Books, or Shells.—W. A. GAIN, Tuxford, Newark.

EXCHANGE.—Duplicate clutches of Sooty and Noddy Terns, Manx Shearwater, Mute Swan, Golden-winged Woodpecker, American Robin, Tits, Buntings, and others. Wanted other sorts of sideblown eggs with data, &c.—F. W. PAPLE, 62 Waterloo-street, Bolton.

EXCHANGE.—Wanted, British Coleoptera and Lepidoptera, or books on Entomology, in exchange for Periodicals.—THOS. W. WILSHAW, 455 Shoreham-street, Sheffield.

EXCHANGE.—Duplicates:—Hesperia lineola in good condition. Desiderata:—Hastata, Bajularia, Saponaria, Lunaria, &c.—F. MILTON, 184 Stamford Hill, London, N.

MEETINGS OF SOCIETIES.

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY 33 Finsbury Square, E.C. Meetings: First and third *Thursdays*, in the month.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge, S.E. Meetings: Second and fourth *Thursdays* in each month.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY, Free Library William Brown St., Liverpool. Next Meeting will be held on Monday, September 12th. Paper "Some further researches upon the Genital Structure of Lepidoptera," by F. N. Pierce, F.E.S.

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TO CORRESPONDENTS.

By reducing the leads between the lines, space equal to nearly three additional pages has been gained, without giving the Magazine the crowded appearance that is so painful to read.

A portrait of the late J. C. Dale, F.E.S., is given with this month's Magazine, forming the sixth of a series of portraits of Naturalists of the Day.

The August part will contain a portrait of G. T. Porritt, F.E.S., &c. Other portraits are in rapid preparation.

Arrangements are now completed for continuing the Molluscan Section. W. A. Gain, Esq., of Tuxford, Newark, has kindly undertaken the Land and Fresh Water Mollusca, and Brocton Tomlin, Esq., of The Green, Llandaff, will attend to the Marine Section. Communications may be made to either of these gentlemen. All letters requiring a reply by post should contain stamp.

The Section for Coleoptera is conducted by G. A. Lewcock, Esq., 73, Oxford Road, Islington, to whom also direct communication may be made.

Mr. Lewcock also represents the Magazine in London, and will receive subscriptions, papers and notes for publication, &c., &c.

Subscriptions, exchanges, business correspondence, notes, papers for publication, and all other communications, to be addressed—JOHN E. ROBSON, HARTLEPOOL.

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THE PTEROPHORINA OF BRITAIN,

BY J. W. TUTT, F.E.S.

(Continued from p. 113).

Larva—The larva of this species which varies very much in colour, was first described by Mr. Gregson and afterwards by Mr. Porritt. Mr. Gregson describes the larva as:—"Half an inch long, rather stout; colour, light yellow-green, semi-transparent (to the naked eye pubescent), with three rows of spines on each side of the dorsal line, which is a very narrow claret-coloured, streaky mark, commencing on the second or third segment, and dying away as it approaches the anal segment; sub-dorsal and spiracular lines not visible in some specimens, in others, slightly so as light streaks; spiracles dark rings; head small, slightly darker than the body and retractile; the larva tapering towards the head and anus." "The larvæ feed upon the common centaury in July, August and September" ("Entomologist," IV., p. 350). Stainton says:—"Larva on seeds of *Erythræa centaurea*. IX–X" ("Manual," II., p. 442). Mr. Gregson foreshadows the variation of the larvæ of this species in his description just quoted. Of this variation I wrote:—"Like all other plume larvæ that I know, those of *loewii* are very variable. I made the following note some time time ago:—'*Loewii* larvæ vary very much; some have a red stripe, some pinkish, others with scarcely any trace of dorsal or other longitudinal markings'" ("Entom.", XXII., p. 105). Although the larvæ occur continuously from June to September, I have never noted or heard of their capture in October, one of the months given in the "Manual." Stainton erroneously thought the larvæ followed the imago in the same year instead of preceding it. Mr. Porritt writes:—"In the middle of August last, Mr. Thomas Parmiter of Cattistock, Dorchester, kindly sent me a nice supply of full-grown larvæ and pupæ of this species. The larva is slightly less than half an inch in length, and of proportionate bulk; head much smaller than the second segment, the lobes rounded and polished; body cylindrical and uniform, tapering a little posteriorly; segmental divisions fairly defined, and a tuft of several short hairs springs from each of the indistinct tubercles. In colour, there are two extreme varieties, and the larva varies between these forms. Var. 1 has the ground colour of a delicate pale-green, strongly tinged indeed with yellow; head pale yellowish-green, the mandibles and ocelli brown; medio-dorsal stripe dark green or purple in different specimens; sub-dorsal stripes yellow, and there are two other fine but very faint yellow lines, one above and the other below the spiracles; segmental divisions also yellow; spiracles black, very narrowly encircled with white.

Ventral surface, legs and pro-legs uniformly pale yellowish-green. Var. 2 has the ground-colour brownish-yellow; head also brownish-yellow freckled with brown; medio-dorsal stripe broad bright purple; sub-dorsal stripes also broad, but of a much less distinct dull pale purple, and having a fine white line running through them; a narrow purple line, edged above with white, extends along the spiracular region. Ventral surface legs and pro-legs uniformly pale yellowish-brown. Feeds on the flowers of *Erythræa centaurea*" ("Entomologist's Monthly Magazine," Vol. XX., p. 228).

PUPA—Mr. Gregson describes the pupa as:—"Purplish flesh-colour; the wing-cases change to dark purplish-brown about two weeks after making up and the moth emerges a few days after" ("Entomologist," Vol. IV., p. 350). In the same Magazine, Vol. XXII., p. 185, I wrote: "The pupæ vary almost to the same extent as the larvæ; some are green, others quite red, with intermediate forms." They are hung up by the anal segment among the food-plant. Mr. Porritt says:—"The pupa is slender and nearly (if not quite) as long as the full-grown larva, it is of almost uniform width, the last two segments only tapering to the anal point. It is glossy and cylindrical, but there is a depression on the thorax and front abdominal segments; the snout and top of the thorax are prominently and sharply defined; the leg-cases extend a long distance down the front of the abdomen, but before the end become detached from it. The ground-colour is yellow, but is almost hidden with a deep pink, which is suffused all over the surface, and almost forms a stripe from the head through the abdominal segments; wing and leg-cases dingy olive, tinged with pink. All the imagos (a fine series) emerged from August 23rd to September 1st." ("Entomologist's Monthly Magazine," Vol. XX., p. 228).

HABITAT—The species seems widely distributed. Stainton gives near Southport in the "Manual." It occurs very freely near Dover, Folkestone, Canterbury and other Kent localities, near Dorchester (Porritt); "occasionally in various localities in the neighbourhood of Wareham, also at Portland" (A. W. P. Cambridge); Howth, Portmarnoch (Sinclair), Ventnor (South). It will probably be found wherever *Erythræa centaureum* is abundant.

TIME OF APPEARANCE—There was some discussion as to the time of appearance of this species, a few years ago in "The Entomologist." Mr. South, Vol. XXII., p. 35, made the moth appear in August and the larvæ in September thus suggesting that the larvæ hatched as soon as the eggs were laid and hybernated as larvæ or otherwise pupated before the winter. Relating to this, I wrote:—"May I kindly ask whether Mr. South has ever bred imagos from the larvæ of *loewi* collected in September from the flowers of *Erythræa centaureum*? or has anyone ever seen the larvæ or pupæ the same year, in the months following the emergence of the imagos? When I was at Folkestone in the middle of August, 1886, 1887 and 1888, Mr. Austin of that town, was breeding *loewi* from *Erythræa* flowers, but the flowers were collected in the latter part of June and early July. This is the ordinary time that the larvæ are to be collected; they pupate throughout July and August, stay in the pupal stage about three weeks, and then emerge. These are, at any rate, the data I have noted. The following year, from June to August, the larvæ can be again obtained; but so far as I know, and so far as I can find out, from the time of emergence of *loewi* in August and September to the appearance of the larvæ again in June, we have an almost perfect blank, filled in only by the statement in Stainton's "Manual" of larva in September and October, and the same statement in Merrin's "Calendar" (transcribed probably from the "Manual"), to the effect that the imago occurs in July and the larva in September. I suppose we may safely presume that Mr. South's reference to Mr. Leech's "Pyralides" ("Entomologist," XXII., p. 35) refers to the description which he (Mr. South) published ("Entomologist," Vol. XVIII., p. 99), and where he writes:—"Larva in August and September, in flowers of common centaury." This I should have supposed was based on other authors. But Mr. South goes on:—"I have a description of the larva, taken from a solitary example in 1881," &c. But surely this is the larva described more in detail ("Entomologist" XXII., p. 35), and to which Mr. South adds "September, in the flowers of *Erythræa centaureum*." Here then is the missing link. If Mr. South has got the life-history of a September larva, when it pupated, and in short, its history until it emerged in the August (his own date) following, we shall have learned something we do not at present know. The "Manual," in making the larva follow the imago the same year, is in error, the "Calendar" is in error; but Mr. South has obtained a September larva, and might have cleared up the error, but he perpetuates it by saying, "Imago, August; larva, September" ("Entomologist," XXII., pp. 104-105). In the footnote to this communication, Mr. South says that my suggestions are correct, but that he bred the moth in October from the September larvæ. It is strange that in stating the time of appearance, he did not add such an important particular, but simply gave "August." So far as I know the life-history of *zophodactylus*, it appears to be as follows:—*Larvæ*—May, June, July, and early August (sometimes even early September), in flowers of *Erythræa centaureum*. *Pupæ*:—July, August, and early September (sometimes late September), hung up by anal segment amongst foodplant. *Imagines*:—Middle of August to middle of September (sometimes as late as October). The remainder of the life-history is, I believe, unknown. I have heard it suggested that the imago hybernates and lays its eggs in the spring, but whether this be so or whether the eggs are laid in the autumn is open to doubt. Nothing appears to be known of the time when the larva hatches but small larvæ may be found from June onwards.

Mimæseoptilus pterodactyla, Linn.—This common species is very widely distributed, occurring probably in all suitable localities in Britain, as it is found in every country in Europe except in the Polar region.

SYNONYMY—*Pterodactyla*, Linn. "Faun. Suec.", No. 1456; Wallgn. "Fjäderm.," p. 18. *Fuscus*, Retz "Gen. and Sp. Degeerii," 35, Zell. "Isis," 1841, 841; "Linn. Ent. Zeit.," VI., 371; Tgstr. "Bidr." 155; H. S., V. p. 375; Frey 413. *Ptilodactyla*, Hb. 16; Tr. IX., 2, 244; Dup. XI. 314, 3; Zell. "Isis," 1839, 277. *Fuscodactylus* Haw. "Lep. Brit.", 476; Stph. "Ill.," IV., 372. *Fuscus* Sta. "Man.," II., 442. Although the synonymy of this species has been somewhat confused it appears to have been due to the application of the Linnæan name *pterodactyla* by the early authors to *Pterophorus monodactyla*. The species itself, through so very common, varies but little and there is never any difficulty or doubt about its determination. *Fuscus* and *fuscodactyla* are commonly used now in Britain for this species. Mr. Barrett says:—"Much confusion seems to have resulted from the fact that our old and well-known *M. fuscus*, Retz., *fuscodactylus*, Haw. (feeding on buds of *Veronica chamædrys)*, is really *pterodactylus, L.*, and that the species which stood in our lists and books as *pterodactylus*, (the *Convolvulus* feeder) is *monodactylus, L.* This last name is wonderfully suitable to this species, which, when at rest, is a conspicuous object, with its fore and hind wings rolled up into "one finger" pointing each way like a sign post" ("Entomologist's Monthly Magazine," Vol. XVIII., p. 180).

IMAGO—This species has the anterior wings divided into two lobes with the apex rather pointed; they are of a reddish-ochreous or brownish-colour, with the costa browner and the inner margin more ochreous, with a small dark brown spot at the end of the fissure and a series of tiny dots running from the base to the middle of the wing. The hind wings, composed of three plumules, dark brown in colour and very glossy. The species is very uniform in colour and rarely varies. Stainton's diagnosis is:—"*P. fuscus*, 10‴—11½‴. F.-w. brownish, darker towards the costa, more ochreous towards the inner margin; before the fissure is a small dark blotch. In the hind-wings, the two first feathers are broader and the third is shorter than in *P. pterodactylus (monodactyla)*. VI.—VII." ("Manual," II., p. 442), whilst the original Linnæan description is:—"*Alucita pterodactyla* alis patentibus fissis testaceis puncto fusco." "Alæ superiores ferrugineo-testaceæ, bifidæ, sed fissura, nisi flectantur non apparente; in medio punctum nigricans" ("Fauna Suecicæ," No. 1456, p. 371). The imago, larva and pupa are figured with the June number of the "Entomologist," 1882.

(To be continued).

THE SECONDARY SEXUAL CHARACTERS OF THE BRITISH COLEOPTERA.

BY JOHN W. ELLIS, M.B. (VIC.), F.E.S.

(Continued from page 141).

The males of *Heterocerus obsoletus* and *sericans* have the mandibles elongate, as is also the case with *Anthophagus alpinus* which also has the head horned on each side. *Prognatha quadricornis* has the head and mandibles of the male much larger than those of the female, the former with two short horns between the eyes (none in the female); the mandibles with long curved horns which nearly meet each other when the mandibles close; while in some species of *Agathidium* we meet with a still more curious modification of the *left* mandible of the male. In the males of *A. marginatum*, *confusum*, *varians*, and *globosum* the left mandible is rather more strongly developed than the other; in *A. rotundatum* this organ is furnished with a small horn-like tooth, projecting upwards; while in *A. rhinoceros* this tooth-like process has become developed into a long horn curving over the head. The eyes of a few beetles are more strongly developed in the males than in the other sex. Examples are: *Ptinus lichenum* and *P. fur*, *Dryophilus pusillus*, *Lagria hirta*, *Luperus flavipes*, and *Euglenus oculatus*—where the eyes in the male are nearly in contact. The male glow-worm *(Lampyris noctiluca)*, too, has eyes much larger than his more phosphorescent mate, and Canon Fowler points out the remarkable fact that in those exotic species of Lampyridæ where the females are apterous or larviform the eyes of the males are always more greatly developed, while in those species where both sexes are winged the eyes are equal. There remains now only to be considered that development of the front part of the head into a more or less elongated beak or rostrum, which is characteristic of the insects belonging to the Rhynchophora. In by far the greater number of species belonging to this group the females have the rostrum longer and more slender than the males; examples of such development are *Balaninus nucum*, in the female of which the rostrum equals the length of the body, most *Ceuthorrhynchi*, most of the genera *Apion*, *Gymnetron*, *Magdalinus*, *Mecinus*, &c. In many of the genus *Apion* while the male rostrum is shorter and stouter it is also duller and more punctured (or even pubescent) than in the other sex. In *Erirhinus vorax*, however, and also it is said, in *Apion minimum*, *A. filirostre*, and *A. ononis* the male rostrum is the longer. At times the rostrum becomes more curved in the female, as in *Balaninus* and some *Apions*, while in a few instances (*Magdalinus carbonarius*, *M. cerasi*, *Rhopalomesites tardii*, &c.) the rostrum becomes distinctly widened at the apex in the male, and though in many instances the antennæ are inserted nearer to the apex in the male than in the female *(Erirhinus*, *Mecinus*, &c.*)* the opposite is frequently the case (many *Hypera).* In only a few instances among the British Coleoptera do we find any sexual modification of the palpi. Those that I have noted are as follows:—In the males of several species of *Hydræna* there is a slight difference in the degree of development of these organs; thus in this sex of *H. atricapilla* the last joint of the maxillary palpi is thickened and somewhat cut out near the tip. Some of the species of *Ocypus (brunnipes*, *ater* and *pedator)* have the last joint of the palpi in the male hatchet-shaped, while that of the female is cylindrical, and a similar—but even more marked—securiform development of the last joint occurs in the males of some of the Chrysomelidæ—for instance, in *Chrysomela banksii*, *staphylæa*, *hæmoptera*, and *Gœttingensis*, and in *Gonioctena olivacea*. The most striking modification of the male palpi, however, is seen in *Hylecœtus dermestoides* and the rare *Lymexylon navale*, in which species these organs become fan-like from a development of processes on the third joint. Of the sexual differences in the antennæ of beetles the most frequently noticed is a more or less evident elongation of these organs in the male sex – with one exception only among the British beetles, *Enthia clavata*, a recently discovered clavicorn, in which, according to Fowler, the antennæ of the *female* are one-fourth longer than those of the male. Simple elongation, without any special alteration in the structure of these organs is found in the males of many of the Coleoptera, and out of a large number of instances the following must suffice as examples: *Quedius rufipes* and *boops*, *Prognatha quadricornis*, *Bryaxis sanguinea*, *Læmophlæus duplicatus*, *pursillus*, and *ferrugineus; Lucanus cervus*; *Corymbites tesselatus* and *quercus*, *Limonius cylindricus; Eros aurora*, *Phosphænus hemipterus*, most *Telephori* and the British species of *Rhagonycha*, *Malthinus frontalis*, *Ptinus fur*, *Dryophilus pusillus*—in which also, as in the genera *Priobium*, *Anobium*, and *Ernobium*, the last three joints are especially lengthened in the male; *Cryptocephalus labiatus* and *pusillus*; *Luperus betulinus*, &c.; *Osphya bipunctata; Anthribus albinus*, in which also the end of each joint bears, in the male only, a tuft of white scales. The maximum of development of the antennæ is met with in the males of the Longicornia—most notably in *Acanthocinus ædilis*, in the males of which the antennæ are often four times the length of body, while those of the female are not more than half those of their partners. In a few instances the number of joints varies in the two sexes, thus: the males of *Prionus coriarius*, *Molorchus minor*, and *Nacerdes melanura* have the antennæ 12-jointed while those of the females have only the usual number - 11; and in *Holoparamecus depressus*, according to Fowler, the female has 10 joints in the antennæ while the male has only 9. *Pria dulcamaræ* has the club of the male antennæ composed of 4 joints, while that of the female has only 3, a fact which caused Stevens to place the sexes in separate genera. The club of the antennæ is not only much longer in the male *Melolontha* but is composed of 7 lamellæ while that of the female has 6 only. In the following species, also we find the club of the antennæ longer in the male: *Serica brunnea*, *Rhizotrogus*, *Throscus dermestoides*, &c.; *Helocerus claviger* and *Megatoma undata*; while the male of *Attogenus pellio* has the last joint of the club as long as the whole of the other joints together, the female having this joint equal to the two preceding together. *Tiresias serra* has the club of the male much larger than that of the female and also strongly serrate. The male of *Euconnus denticornis* has two joints of the antennal club distinctly widened and sharply toothed on the inner side, that of the female being simple. Many beetles have the antennæ of the male with the joints so extended as to produce an appearance like that of the teeth of a saw (serrate) or of a comb (pectinate) while the females have these organs either quite plain, or only slightly serrate. Instances of such are common among the Elateridæ—*Corymbites pectinicornis* and *cupreus* and *Microrhagus pygmæus* being examples from this group. The same condition is observed in *Prionocyphon serricornis*, *Tillus elongatus*, *Xyletinus ater*, *Prionus coriarius*, *Bruchus pectinicornis*, *Pyrochroa pectinicornis*, &c. Instances of still greater development of the male antennæ are furnished by the fan-shaped (flabellate) structure of these organs in: *Melasis buprestoides* and *Ptilinus pectinicornis*—in the females of both of which these organs are simply pectinate, *Drilus flavescens*; the male of which has most remarkable fan-like antennæ while those of the larviform female are short and thread-like. The antennæ reach their greatest development among British beetles in the males of the curious *Metæcus paradoxus* which is parasitic on wasps, in which these organs are strongly comb-like on two sides—like a feather, those of the female being slightly serrate on one side only. Most singularly in *Hylecœtus*—in which the male has the fan-like palpi, this sex has the antennæ feebly serrate, while in the female they are strongly serrate or even comb-like—strange exception to the usual condition. Occasionally we meet with instances where only one, or a few only of the antennæ joints undergo sexual modification. Thus while the male of *Cercus pedicularius* has the first *two* joints widened, that of *C. bipustalatus* has only the first enlarged, the females of both these species having the joints unaltered —and scarcely distinguishable from each other; the males of *Batrisus* have the first two joints of the antennæ longer than in the females. The genus *Bythinus* presents some curious alterations in the basal joints, in the male alone : *B. puncticollis* has the two basal joints thickened, and the first joint has a tooth on the inner side; *B. curtisii* has the second joint globular with a similar tooth; *B. securiger* and *burrelli* have the first joint cylindrical and while in the former the second is very broadly hatchet-shaped, in the latter this joint is like a new moon with the horns projecting inwards. *Homalota coriaria* has the second and third joints of the male antenna furnished with long hairs, while several of the same genus (*pagana*, *oblongiuscula occulta*, *picipes*, &c.) have the third joint thickened (stouter) in the male. *Apion difforme* has, in the same sex, the third and fourth joints very much broader than the rest. The genus Phyllotreta contains several species in which the fourth and fifth joints or (*ochripes*) the fifth alone is stouter in the male; this sex of *Tychus niger* has the fifth joint three times broader than either the fourth or sixth; while *Agrilus laticornis* has the whole of the middle joints strongly widened in the male, and the same sex of the water beetles *Noterus clavicornis* and *sparsus* have the whole antennæ greatly, but regularly thickened— those of the female being simple. The most singular modifications in the antennæ are seen in the males of some species of Malachius and Meloe—modifications believed to be intended to assist in the capture of the female and for holding her during the act of sexual union. In *Malachius æneus* the second joint of each antenna projects inwards, and the third is furnished with a long hook, which nearly meets the prominent second; in *M. bipustulatus* the second joint has a broad prominence, the third has a large tooth, the fourth has a hook nearly meeting the second, and the fifth is swollen; *M. marginellus* has the third, fourth, fifth, sixth, and seventh joints hollowed out on the inner-side, the ends of the joints forming projecting teeth; while the male of *M. viridis* has the antennæ quite simple. In the males of several species of *Meloe* (*e.g. M. proscarabæus*) the third, fourth, and fifth joints are somewhat dilated, the sixth and seventh are flattened, joined by their edges, and so hollowed out on the inside as to give the organ the appearance of having been broken and badly rejoined—the antennæ of the female being quite simple. The last peculiarity to be mentioned here occurs in the males of several species of *Telephorus* (*lividus*, *pellucidus*, *nigricans*, *obscurus*, *bicolor*, &c.), where the middle joints of the antennæ, usually the fourth to the tenth, have a very fine groove or impressed line running length-wise—a peculiarity the purpose of which can scarcely be conjectured.

(To be continued.)

RANDOM NOTES ON BRITISH LEPIDOPTERA.

BY JOHN E. ROBSON, F.E.S.

Several of my subscribers have suggested that a series of Notes on British Lepidoptera, somewhat similar to the "Gossipping Notes on British Coleoptera," by Mr. Lewcock, would be of interest; I propose, therefore, to attempt a similar series, though I will not follow quite closely in Mr. Lewcock's footsteps. He is giving us the whole of the British Coleoptera after a specified arrangement. Whilst I may be able, in time, to go through the whole of the British Lepidoptera, I do not intend to adhere closely to any special order, but to make notes on any species or group that may be attracting attention at the moment, refer to captures of new species or rarities, or any matter that appears to be of interest, without waiting till their turn came in regular sequence, which might not be for a considerable period. When there were no such notes to be made I would take the species in regular order, or go back to species already dealt with, when anything new or interesting turned up concerning them. London collectors, who meet each other frequently at the meetings of the various societies, have opportunities for knowing much that is going on, that are not available for those residing in the provinces. These articles may, in some small degree, keep country collectors "up to date" in matters pertaining to lepidoptera. It is only possible, however, to do this if I have the ready assistance of all my friends and correspondents.

Hadena satura.—The reported capture by Mr. Tutt (see *ante* p. 3), of two specimens of this rare insect, is a matter of very great interest, as it was looked upon by many as a doubtful British species. Stainton's Manual says (Vol. 1, p. 274), "Two specimens only have occurred, one in Oxfordshire and one in Cambridgeshire." Newman adds "and one in the county of Wicklow, in Ireland, by Mr. Bristowe." During a recent visit to London I had the pleasure of examining the specimens taken by Mr. Tutt, and which are in beautiful condition. They do not closely resemble any species I had seen before, but agee in all respects with a pair of European *satura* in Mr. Tutt's cabinet. It will be noticed that their place of capture is within the area of former records. An insect that was seen by many of my readers, when sent round in the *Young Naturalist* Exchange Club Basket, three or four years ago by Mr. Reid, of Pitcaple, was thought by some who saw it to be *satura*. I thought then, and still think, it was a rather curious example of *exulis*, but, however that may be, I can say with certainty, after examining Mr. Tutt's beautiful specimens, that this insect was not *satura*. Mr. Reid, however, tells me he has undoubtedly turned up the true *satura* in his own neighbourhood, and what is still more satisfactory, that he has found the larvæ.

VANESSA ANTIOPA.—I have to relate a most marvellous occurrence in connection with this insect, one of those incidents that could not be imagined or deemed possible in the ordinary course of events. It is well-known that the butterfly is common in North America, and the collectors there breed it in some numbers. Last year, my friend, Mr. C. H. H. Walker, of Liverpool, received from a correspondent in Canada 10 pupæ of *V. antiopa*, out of a batch of 30 his friend had reared. On the first day after their arrival in Liverpool nine of them emerged, five being of the ordinary Canadian form, and four being the variety *laturnia*. This remarkable variety differs from the type in a most pronounced manner, the yellow margin being from two to two-and-a-half times the normal width, the usual velvety black bordering on the inside, with the metallic blue spots of typical *Antiopa*, being entirely wanting. This broad yellow border is more or less sprinkled with black scales, especially in one specimen, giving it quite a suffused appearance. Of the two typical yellow spots on the costa, one, the innermost, is absent. The specimens which I had the pleasure of examining when last at Liverpool, are all of large size and perfectly developed. Mr. Walker had not much acquaintance with *Antiopa*, and finding the forms in so nearly equal proportions, he rashly concluded the difference was sexual; for some time, therefore, no notice was taken of the occurrence. When he learned that this was not a sexual difference, he made enquiry about the form, but no one appeared to know anything about it in this country. Mr. Fletcher, the Canadian Dominion Entomologist, was communicated with, and he replied that the variety in question was known in North America, but was of such extreme rarity that although he had reared many thousands of the butterfly in his desire to possess this particular form, he had never even so much as seen it. The tenth of Mr. Walker's pupæ was now opened, the imago was found to be fully developed and proved to be another specimen of the variety. Thus, out of 10 pupæ taken at random from 30 all reared together, 5 proved to be of this exceedingly rare variety. Strange to say, enquiry has elicited the fact that not one of the remaining 20 pupæ which matured in Canada, varied in the slightest degree from the usual type. One of the varieties has been forwarded to Mr. Fletcher, in Canada, one is in the collection of our valued correspondent, Mr. F. N. Pierce, and the remaining pair are cherished by their fortunate breeder as much on account of their extraordinary history as from their value as rarities. I hope to give a figure of this beautiful form in a future number.

HEPIALUS HUMULI.—On p. 151, Dr. Chapman suggested that the ♀ of this species was attracted by scent as well as by sight. To follow up the idea I confined two males in a chip box. They were taken while hovering, the time at which the odour, if there were one, would be given off. Next morning there was a faint but decided perfume in the box, which was still more distinct after longer confinement. I then enclosed other four males in a similar chip box, and the strength of the odour was this time considerably greater than before It gave me the idea of decaying pineapple, but possibly the expectation of such a smell might help the idea of it ; a lady to whom I submitted the box, asked if I had had peach stones in it. The boxes were subsequently sent to Dr. Chapman who writes : "Both the boxes still have a decided odour which I cannot exactly liken to anything I know. I think with my observations, the brushes of the ♂, and this experiment on odour, you are sufficiently armed to say *Humuli* ♂ attracts ♀ from a distance by smell, and when near (perhaps three yards) by sight." The retention of the odour in the box nearly a week after the insects had been set at liberty explains another phenomena that has been several times observed and recorded, viz.: the attraction of the ♂ to a place where the ♀ had probably been some time before. In August, 1890, I took a number of ♂ *H. sylvinus* flying to a spot on the turf, pushing themselves down upon it and searching about before flying away. I had no doubt a ♀ had been there, perhaps the previous evening. I went back to the spot the following night and found that only a few specimens were then attracted, and did not seem so eager or certain. In 1891, I observed exactly the same with *N. xanthographa*, though I did not return on the second evening. This year I made a somewhat similar observation respecting *E. albulata* for which see next note.

EMMELESIA ALBULATA.—On 8th June last, I saw this species flying freely in a meadow where yellow rattle abounded. It was just six o'clock and the sun was shining brightly. As I wandered about, netting one or two well-marked forms, I observed a large number at one particular spot. On reaching it I saw two already paired, sitting on a grass stem. Around them the males were sitting, five or six on every stem, looking like small white signal flags waving in the wind, while others hovered about and tried to find places where to settle, pushing others off, and especially crowding up to those already paired. I had received Dr. Chapman's note (p. 151) that day and

I took particular notice of the manner in which they came up. I saw that all that passed on the side from which the odour, if there were one, would be carried, instantly arrested their onward flight and began to approach, in what was evidently a searching manner, the spot where the attraction arose. All new comers flew up to the paired couple, and hovered about them for a while, then sought a resting place. There must have been two hundred of them in all, and it was really a very pretty sight. I was quite satisfied that an odour had emanated from the ♀ and that it remained attractive though she had already found a mate.

THE DIPTERA OF DORSETSHIRE.

BY C. W. DALE, F.E.S.

(*Continued from page* 67.)

Family—Dixidæ.

This family consists but of a single genus, which appear to be a sort of connecting link between the Mycetophilidæ and Tipulidæ. The flies are found throughout the year, and in the winter months seek shelter in hayricks and amongst ivy, ferns, moss, &c. The name Dixa is descriptive of the two bifurcate nervures of the wings, which distinguish it from its congener. This family like many genera of the Tipulidæ, is very much confined to northern latitude. The larvæ inhabit fungi. The flies generally appear in the evening and are found in meadows and damp woods. There are fifteen species found in Europe.

76. *Dixa æstivalis*, Meig. Generally distributed.
77. *D. aprilina*, Meig. Generally distributed.
78. *D. maculata*, Meig. Generally distributed.
79. *D. nebulosa*, Meig. Generally distributed.

Family Tipulidæ.

This is one of the most interesting families of the Diptera, and contains a number of species, mostly of large size; indeed one species, *Tipula gigantea* is the largest British species of the order, for although, not so robust as *Tabanus bovinus* or *Asilus crabroniformis*, it beats them in expanse of wings and legs. It is this expanse of legs which has got for them the English name of Crane-flies or Daddy Long-legs. The legs are moreover extremely brittle and come off at the slightest touch, so that it is best to gum them, irrespective of size, on cards. The species of the typical genus Tipula are found in damp meadows in vast numbers, especially in autumn, the larva feeding upon the roots of the grass, and occasionally doing much mischief. This is particularly the case with *Tipula oleracea* and *paludosa*, the larva of which two species sometimes completely lay bare wide tracks of meadow land. The species of Trichocera are of smaller size, and may be observed flying throughout the winter from September to May, even when there is a sharp frost and the ground is covered with snow, whenever there is a glimpse of warm sunshine. Dalman also discovered the singular and wingless *Chionea araneoides* running quickly upon fallen snow in Sweden throughout the winter.

In Britain, we have no wingless species, but the female of *Tipula pagana*, Meig.=*dispar*, Hal., and both sexes of *Molophilus ater*, Meig.=*brevipennis*, Curt., have the wings so short as to be quite unfitted for flight. The most gaily coloured and robust species of the family are those of the genus Ctenophora, the males possessing most beautifully feathered antennæ. The larvæ of this genus, and also of *Tipula flavolineata* are rotten wood feeders. Most of the larvæ of the genera Tipula and Pachyuhina feed on the roots of grass; those of Limnobia and allied genera in fungi and decaying vegetation.

All the larvæ of this family are not, however, terrestrial, the preparatory stages of several groups being undergone in water; of these the genus Ptychoptera exhibits a singular departure from the rest of the family, the larva being very long and worm-like, but much narrowed at the posterior extremity, which is terminated by a very long and delicate tube serving to convey the air to two tracheæ, which extend through the entire length of the body. In the pupa this peculiarity is reversed, the body being terminated by five small points, whilst the anterior extremity is furnished with a very long thread-like appendage serving like the former, to supply air to the insect, its extremity being extended to the surface. The larvæ of these species which reside in damp ground, or in rotten wood, have not the thoracic portion so distinctly observable as in some other species; they are not furnished with false legs, but have two short horns at the anterior, and several fleshy conical appendages at the posterior extremity of the body; the mouth is composed of parts which have some analogy to the Mandibulata. The pupæ is naked, with two respiratory tubes near the head, and the margins of the abdominal segments are spiny, enabling them to thrust themselves forward to the surface of the ground when ready to assume the winged state.

The best months for collecting the flies are the months of May, June and September. The following are the species found in Dorsetshire.

80. *Acyphona maculata*, Meig Generally distributed.

81. *Rhypholophus lineatus*, Meig. Common in damp woods, appears

in April, and sometimes as early as the end of March, and may be met with to October.

82. *R. nodulosus*, Maiq.=*hederae*, Curt. Generally distributed, appears in May, and may be met with to October.

83. *Molophilus ater*, Meig.=*brevipennis*, Curt., Brit., Ent., figure. This is a fairly common species on the moors of the north of England and Scotland, but is rare in Dorset, being found by my father on Knighton Heath, on July 13th, 1839.

84. *M. murinus*, Meig. Fairly common by the side of shady ditches in May and June. This is a difficult species to preserve as the down on the wings rubs off so easily. This and the last are the two smallest British species of the family.

85. *M. obscurus*, Meig. Abundant on rushes throughout the summer.

86. *M. propinguus*, Egg.=*vassipes*, Curt., Brit., Ent., figure.—Common in shady places from June to September. It is of an ochreous colour.

87. *M. appendiculatus*, Staeg. Occurs on Poole Heath in July. It is smaller than the last and is more of a feruginous than ochreous colour.

(To be continued.)

THE HYMENOPTERA-ACULEATA OF LANCASHIRE & CHESHIRE,

BY WILLOUGHBY GARDNER, F.R.G.S.

(Continued from page 147.)

ANDRENA.

The females of this large genus burrow 10 to 12 inches deep in the ground in various situations, some in vertical banks, some in sloping undulations, and others choose flat and hard-trodden pathways. Their tunnels branch out in all directions below the entrance, and are usually rougher and much less finished internally than those of previous genera. Most of the species, such as *A. fulvicrus*, *albicrus*, *labialis*, and *coitana*, are gregarious, a few burrow apart.

ANDRENA, Fab.

albicans, Kirb.—Common and generally distributed, B.C.; noted from Chorlton near Manchester, J.R.H.; Rainhill, H.H.H.; Chester, E.C.T., R.N.; Rock Ferry, J.T.G.; Oxton and Hoylake, W.G.

atriceps, Kirb.—*tibialis*, Kirb., Thoms, *Mouffetella*, ♂, Kirb.—So far only recorded from Sale and Chat Moss, both near Manchester, J.R.H.

Trimmerana, Kirb.—Abundant in district, B.C.; particular localities noted are Chorlton, near Manchester, J.R.H.; Rainhill, H.H.H.; Chester neighbourhood, E.C.T., R.N.; Rock Ferry, J.T.G.; and Oxton, W.G.

cineraria, Linn.—This handsome species is recorded from Hough End Clough, near Manchester, J.R.H.; Rainhill, H.H.H.; Chester, E.C.T.; and variously in district, B.C.

thoracica, Fab.—Only recorded from Rock Ferry, J.T.G.

nitida, Fourc.—Widely distributed, B.C.; Willaston, Cheshire, J.T.G.

fulva, Schr.—Well distributed in district, burrowing in grass plots and trodden paths, B.C.; reported specially from Stretford, near Manchester, J.R.H.; Rainhill and Prescott Carrs, H.H.H.; Chester, E.C.T., R.N.; Eastham, J.T.G.

Clarkella, Kirb.—Near Manchester, Bowden and Delamere, B.C.; Rainhill, H.H.H.; Wallasey, W.G.

nigroænea, Kirb.—*aprilina*, Sm.—Bowden and Hazelgrove, B.C.; Bollin Valley and Bowden, J.R.H.; Rainhill, H.H.H.; Chester commonly burrowing in banks, E.C.T., R.N.; Rock Ferry, J.T.G.; Capenhurst and Wallasey, W.G.

Gwynana, Kirb. (1st brood).—*bicolor*, Fab. (2nd brood).—Bowden and Hazelgrove, B.C.; Rainhill, H.H.H.

angustior, Kirb.—A scarce insect taken at Hazelgrove, B.C.

varians, Rossi.—Has occurred at Wallasey and Chester, E.C.T.; and at Rock Ferry, J.T.G.

helvola, Linn.—Hazelgrove, B.C.; Rainhill, H.H.H.; Rock Ferry, J.T.G.; and Wallasey var. fucata. Sm., W.G.

nigriceps, Kirb., Sm.—This rare species has been taken at Rock Ferry, J.T.G.

fulvicrus, Kirb.—*extricata*, Sm.—Rainhill, H.H.H.; Rock Ferry, J.T.G. The variety "extricata" (Smith) is reported from near Liverpool in F. Smith's "British Bees," second edition, p. 58.

albicrus, Kirb.—Well distributed in district, B.C. Taken at Sale, Stretford and Rollin, near Manchester, J.R.H.; Rainhill, H.H.H.; Rock Ferry, J.T.G.; Wallasey, R.N., W.G., and Hoylake, W.G.

analis, Panz.—This local species has been taken at Rock Ferry, J.T.G.

humilis, Imh.—*fulvescens*, Sm.—Has occurred near Manchester, B.C.; and at Rock Ferry, J.T.G.

labialis, Kirb.—*separata*, Sm.—Taken at Hazelgrove, B.C.; at

Bollin Valley, Eccles and Lindow, J.R.H.; and at Rock Ferry, J.T.G.

minutula, Kirb. (2nd brood).—*parvula*, Kirb. (1st brood).—Crosby and Rainhill both near Liverpool, H.H.H.

nana, Kirb.—Bowden and Hazelgrove, B.C.

Wilkella, Kirb.—*xanthura*, Kirb.—Bowden and Hazelgrove, B.C.

MACROPIS, Panz.

The only British species of this genus is very rare, and has not been recorded in our district.

DASYPODA.

Our single British species burrows in large colonies in sandhills, generally choosing a bank overgrown with herbage with a southern aspect.

hirtipes, Latr.—Sale and Bollin valley, J.R.H.; Wallasey sandhills, W.G.; and Cheshire Coast, B.C.

CILISSA, Leach.

This genus contains only two species occurring in Great Britain; their habits are probably the same as the gregarious members of the genus Andrena. They have not, so far, been recorded in our district.

PANURGUS, Panz.

Our two British species burrow in hard trodden pathways. They have not, hitherto, been observed in our district, though fairly distributed throughout the country.

(To be continued).

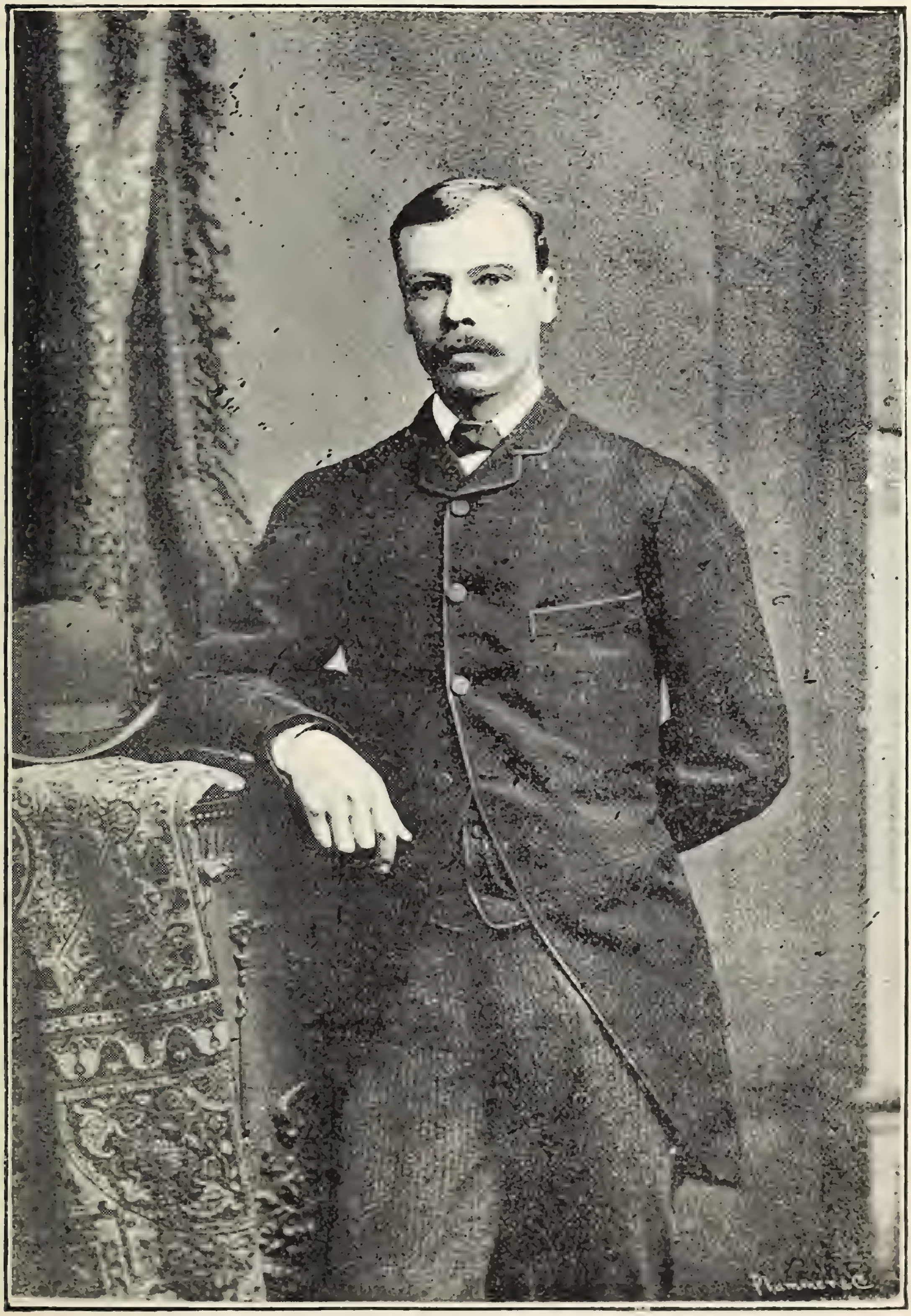
NATURALISTS OF THE DAY.

VII.—GEORGE TAYLOR PORRITT,

F.L.S., F.E.S., ETC.

The gentlemen whose portrait we present with this number is a worthy successor to that band of Northern Entomologists who made Yorkshire and Lancashire famous half a century ago. While he has kept up the reputation of the Yorkshire naturalists, he has also extended his sphere of action, and is as well known in town as in the provinces.

Mr. Porritt was born at Huddersfield in the year 1848, and took so early an interest in matters entomological that he was made a Fellow of the Entomological Society of London when only 22 years of age. and two years after he was elected to Fellowship in the Linnæan



GEORGE TAYLOR PORRITT,

F.L.S., F.E.S., ETC.

BRITISH MUSEUM
NATURAL HISTORY.

Society of London. In 1887, he had the honour of being placed on the Council of the Entomological Society. For many years he was President of the Huddersfield Naturalists' Society. He has also had a long and very active connection with the Yorkshire Naturalists' Union. For ten years he edited (in conjunction with Mr. C. P. Hobkirk) their Magazine, "The Naturalist"; was President of the Entomological Section in 1880, from 1882 to 1885, and again from 1891 to the present time; and in connection with this Union he published his most important work, "A List of the Lepidoptera known to occur in Yorkshire." This valuable list was issued in 1883 and forms Vol. II of the "Transactions of the Yorkshire Naturalists' Union." It contains an account of the occurrence in Yorkshire of 1349 species, being nearly two-thirds of the British Fauna. The enormous labour entailed in its compilation can only be appreciated by those who have attempted similar work, while the care exercised is evidenced by the fact that no errors have been pointed out, even in this extensive list.

Mr. Porritt has been for many years one of the most skilful in raising Lepidoptera from the egg. Descriptions from his pen, of larvæ little or unknown to science, are scattered through the various magazines. When the Ray Society commenced to publish Buckler's figures of larvæ of British Lepidoptera, the Rev. John Hellins, who had worked in conjunction with Mr. Buckler, undertook to supply, as far as possible, descriptions of such larvæ as had been figured, but of which Mr. Buckler had left no verbal account, or but an imperfect one. Mr. Hellins died when only the second volume was completed, and Mr. Porritt was the first person asked by Mr. Stainton to continue the work; it is greatly to be regretted that he could not see his way clear to undertake it, for subsequent volumes have been issued without any of these supplementary descriptions.

Mr. Porritt has also been very fortunate in discovering varieties. A very marked form of *C. suffumata* which he took at Huddersfield has been named *Porrittii* in his honour. He also was the first to call attention to the melanic races of *Y. elutata* and other species. More recently he turned up at Huddersfield a wonderfully dark race of *A. mendica*, to which the Entomological Society devoted a plate, in their "Transactions" for 1889. In 1887 he discovered, also at Huddersfield, a perfectly melanic form (inky black) of *Boarmia repandata*, quite different from any of the previously described forms. A black *P. flavicincta* also fell to his lot, being taken in his own garden. Mr. Porritt believes that local climatic conditions have operated to produce so many melanic forms there.

Reports of Societies.

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

Thursday, July 7th.—Exhibits.—Lepidoptera—Mr. Hollis, a melanic example of *Cheimatobia brumata* from Highgate, and a very fine form of *Spilosoma lubricipeda* approaching the var. *radiata*. Mr. Battley, varieties of *Smerinthus tiliæ*, also living larvæ of *Colias edusa*, *Simyra venosa*, *Gonoptera libatrix*, *Cidaria suffumata* and *Stauropus fagi*. He stated that he found the ova of *S. fagi*, deposited in batches of about half a dozen, at varying heights on a large beech trunk in Epping Forest. The larva had hatched on July 2nd and cast their first skin on July 4th. He also mentioned that he had already bred about fifty *Phorodesma smaragdaria*, and that although the larvæ had been fed on southernwood, the imagines were rather above the average in size. Mr. Clark, a series of *Leucania turca* taken at sugar in the New Forest. He stated that sugar had been unusually attractive during his stay at Brockenhurst, and that on one occasion he counted 93 insects on a single patch. Mr. Bacot, *Acronycta leporina*, *Rusina tenebrosa* and *Neuria saponariæ* taken at sugar at Hadleigh. Mr. Rosevear, *Smerinthus ocellatus*, *S. tiliæ*, and a series of *Eubolia feribolata* from Guernsey. Mr. Prout, a series of *Melanippe unangulata* and a slightly asymmetrical form of *Melanthia rubiginata*; also examples of *Notodonta trepida* and *Stauropus fagi* from West Wickham, and a specimen of *Eupithecia togata* from Hale End (Epping Forest). Mr. Quail, a life history of *Zeuzera æsculi*, and a specimen of an Australian species closely approaching *Z. æsculi* in shape and structure, but resembling *Cossus ligniperda* in coloration; also two examples of *Stauropus fagi* from Epping Forest. Dr. Buckell, a bred series of *Demas coryli*. Mr. Milton a number of species bred this season including *Smerinthus ocellatus*, *S. tiliæ*, *Geometra papilionaria*, &c. Coleoptera.—Mr. Heasler, several species from Eynsford, including *Lithocaris fuscula*. *Pseudopsis sulcata*, *Otiorhynchus tenebricosus* and *Platytarsus echinatus*. He remarked that the last was exceedingly local, all the nine examples exhibited being taken in one sweep and that subsequent work had failed to produce more. Mr. Rosevear, a large species of snail from Barbadoes. Mr. Riches, two eggs of the tortoise, and specimens of parasites taken from the legs of that animal. Mr. Quail mentioned that he had been working for pupæ of *Cossus ligniperda*, but found that the woodpeckers had forestalled him, leaving nothing but empty cocoons.

Thursday, July 21st.—Exhibits.—Lepidoptera—Mr. Clark, a variety of *Fidonia atomaria* from Ringwood, a variety of *Noctua festiva* with distinct transverse dark lines, and two *Eulepia cribrum*. Mr. Smith, *Macroglossa fuciformis* and *Melanthia albicillata* from the New Forest, and *Melanippe procellata* from Blandford, Dorset. He recorded the capture of *Hesperia actæon* and *Sesia ichneumoniformis* near Swanage. He also exhibited, on behalf of Mr. Quail, *Epione advenaria* and *Cidaria picata*. Dr. Sequeira, *Eulepia cribrum*, *Euthemonia russula*, *Aplecta herbida* and *Boarmia repandata* var. *conversaria*. all from the New Forest. Mr. Battley, *Melitæa athalia* and *Ennychia octomaculalis* from Abbots Wood. Mr. Nicholson, bred specimens of *Cynthia cardui*, and a var. of *Abraxas grossulariata*. Mr. Bacot, a variable series of *Hepialus lupulinus* from Tottenham, several specimens being almost entirely silvery white in colour; also a specimen of *Dasychira pudibunda* from Clapton. Mr. Allbuary, *Sesia bembeciformis*, *Melanippe hastata*, *Ennychia octomaculalis* and a fine specimen of *Deiopeia pulchella* from Dover. Mr. Simes, a living female of *Bombyx quercus* and young larvæ of *Caradrina alsines* and *Tæniocampa instabilis*. Mr. Milton, *Chelonia villica*, *Endromis versicolora* and many others; also in Coleoptera, *Dytiscus circumflexus*, *Aromia moschata*, *Iylbius fenestratus* and *Aphodius rufescens*; also several fossils from the chalk at

Gravesend Mr. Heasler, *Quedius maurorupus* and *Orchesia micans*, both bred from fungus from Bexley. Mr. Burrows, *Strangalia rivestita*, taken near Coventry. Mr. Rosevear, specimens of *Helix alibensis*, a snail that is only found at Gibraltar, and which has hitherto been unrepresented in the British Museum. Dr. Buckell remarked that the habit of resting head downwards appeared to be usual in two species, *Nola cristulalis* and *N. cuculatella*, showing a similarity in habits of two allied species. He also recorded the occurrence of several chalk insects at Southend, Essex, a locality on the London Clay, notably *Melanippe procellata*, *M. rivata* and *Eubolia bipunctaria*. Mr. Battley recorded *Eremobia ochroleuca* and *Aspilates citraria* as further examples of chalk insects from that locality. Mr. Nicholson mentioned that he had seen two flights of *Cynthia cardui* depositing their eggs on some thistles at Chattenden. Dr. Sequeira remarked that the male glow-worm had the power of emitting a faint light, although it was not as bright as that of the female. Messrs. Tremayne and Smith gave accounts of Entomological work at Lyndhurst and Dorsetshire, the chief feature being the large number of insects attracted to sugar.

(No other reports had reached us when we went to press).

General Notes.

Vanessa cardui.—Is this to be a *Cardui* year? Being on the West coast of Lancashire for a few days at the beginning of July, I discovered plenty of larvæ of that insect, which appears so uncertain in its appearance. The larvæ were feeding on the common thistle, and varied in size from the newly-hatched to almost full-fed. I picked up 30 or 40 and could have got many more. I should like to hear whether other correspondents are finding the larva common in their localities.—J. W. Baldwin, Darwen Road, Dunscar.

Deilephila galii at Hartlepool.—One of my workmen on the quay found a specimen of *Deilephila galii* at rest, on the 13th of July. It had been in fine condition but he spoiled it by taking hold of its wings. I kept it a few days in the hope of obtaining a few eggs, but to no purpose. Are we going to have another *galii* year? - John Gardner, Hartlepool.

Vanessa antiopa at Forres.—We have a great number of *P. gamma* with us this year, *V. cardui* and *atalanta* were also very common. When collecting in the Altyre Wood, near Forres, in June, I saw, and nearly captured a Camberwell beauty (*V. antiopa*), the first I ever saw alive. I blame myself very much for not taking it, but such a fit of excitement came over me that I missed the first stroke, and although I chased it for a long distance I never got another chance.—Wm. Reid, Pitcaple.

Acronycta myrica in Elginshire.—While with my friend Mr. Milne, of Aberdeen, at Lhanbryde, we got *A. myricæ* at sugar. I believe this species has only been taken once in Elginshire before.—Wm. Reid, Pitcaple.

Chrysis neglecta over two years in larva and pupa stage.—In September, 1889, Dr. Chapman very kindly sent me nests of

Odynerus spinipes with its parasites *Chrysis bidentata* and *neglecta*, the two first named came out in the following summer, but *neglecta* did not appear until 24 June, 1892. In March I opened one of the cocoons and saw the larva was still alive but much contracted, I then gave the sand, in which were the cocoons, a good watering and left the flower pot with its contents exposed to the weather, at the beginning of June I removed them indoors and exposed them to the sun, with the result of this treatment I have bred three.—G. C. BIGNELL, Stonehouse, Plymouth.

Mollusca.

NOTE.—I have seen *Phasianella pullus*, var. *bicolor*, Monts., from South Wales, collected by Mr. Barrett. This is new to Britain; it is simply a mutation with alternate *transverse* broad bands of white and red. In the same lot from South Wales was *mut. millepunctata*, described by me in 1887.—T. D. COCKERELL, Kingston, Jamaica.

A CATALOGUE OF

THE SLUGS OF THE BRITISH ISLES,*

BY WALTER E. COLLINGE,

Assistant Demonstrator in Zoology, St. Andrew's University, and Editor of "The Conchologist."

I am constantly being asked by correspondents and malacologists for a list of British Slugs, and to meet this want I have compiled the following one. During the last five years an increased interest has been taken in the slugs, with the result that a number of species have been added to the list as well as numerous varieties.

Well-marked and constant specific or generic characteristics are difficult to find in the slugs. Most anatomists are, however, now agreed that general form, coloration, structure of the shell, lingual ribbon, &c., are characters which vary with age and habitat, and for specific or generic distinction are unsatisfactory, thus Simroth, Scharff, Jourdain, Garnault, Pollonera, and others have all decided in favour of differences in the alimentary and generative systems (especially the latter), they being better marked and more constant.

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*The important additions recently made to our knowledge of the British Slugs, especially the recognition of several species of *Arionidæ* not previously known to exist in this country, render the publication of new lists from time to time a necessity to the student of this most interesting branch of Malacology. It is, therefore, with great pleasure that the following new list is presented to the readers of the *B.N.*

5 AUG.
BRITISH MUSEUM NATURAL HISTORY.

EXCHANGE.

*Lepidoptera marked * are bred.*

MICRO-LARVÆ FOR THE MONTH.—Mr. Elisha has not been well enough lately to prepare his usual paper. Will our readers kindly excuse its non-appearance. A reference to the part for August last year will give much aid to the workers in this department.—*Ed.*, *B.N.*

EXCHANGE.—Duplicates: A. Blomeri, T. punctata, biundularia, E. satyrata, laricata, A. ulinata, Z. loniceræ, bred. Desiderata very numerous.—W. HEWETT, 12 Howard-street, York.

DUPLICATES.—Expolita.—JOHN E. ROBSON, Hartlepool.

DUPLICATES.—Cinxia, Statices (Guernsey), Emutaria (few), Lunigera, Lucernea, Herbida, Hepatica, Brunnea, Triangulum, Lithoxylea, Pastinum, Anceps, Derasa, Conigera, Nebulosa, Duplaris (few), Viretata, Viridata (few), Russula ♂, Z. trifolii, Irrorella, Spilodactyla, Pupæ of Geminipuncta. Desiderata: Extersaria, Fuscula, Leporina, Xerampelina, Aurago, Menyanthidis, Dahlii, Lutulenta, Nigra, and offers.—ALBERT J. HODGES, 2 Highbury Place, London, N.

DUPLICATES.—Fine Lubricipeda var. Radiata and intermediate forms; accepted offers only replied to at this time of the season.—J. HARRISON, 7 Gawber-road, Barnsley.

EXCHANGE.—Desiderata: Sinapis, T. rubi, W. album, Pruni, Agestis (South of England), Ægon ♀, Iris, Polychloros, Cinxia, Adippe, Paphia, Epiphron, Ægeria, Megæra, Hyperanthus, Tages, Actæon, Paniscus, and all the clearwings but Tipuliformis.—JOHN E. ROBSON, Hartlepool.

EXCHANGE.—Melanism and Melanochroism—I am working at this subject and will be obliged if any one who takes dark forms of Lepidoptera will communicate with me. I especially want information respecting those species that have assumed darker hues during recent years.—JOHN E. ROBSON, Hartlepool.

WANTED.—Collectors to look through their duplicates for old, chipped, crippled, deformed, damaged and utterly useless Male Lepidoptera with bodies; will pay postage or endeavour to make a return.—F. N. PIERCE, 143 Smithdown Lane, Lverpool.

EXCHANGE.—Duplicates: Jacobæa, Carpini, Haworthii, Silago, Zonaria, Pilosaria, and many others. Desiderata:—Elpenor, A. urticæ, Versicolora, Papilionaria, and offers.—J. W. BALDWIN, 472 Darwen Road, near Bolton, Lancashire.

DUPLICATES—Cardamines, Rhamni, Corydon, Paphia, Cardui, S. populi, Menthastri, Dispar Neustria, Vinula, Cæruleocephala, Ianthina, C. nigrum, N. rubi, Litura, Vaccinii, Satellitia, Cerago, Ferruginea, Chi, Oxyacanthæ, Meticulosa, Protea, Oleracea, Testacea, Nupta, Scutulata, Pilosaria, Illunaria, Elinguaria, Tiliaria, Pennaria, Miata, Prunaria, Maculata, Desiderata, very numerous, also ova, larvæ and pupæ.—W. E. BUTLER, Hayling House, Oxford road. Readings.

CHANGE OF ADDRESS.

CITY OF LONDON ENTOMOLOGICAL & NATURAL HISTORY SOCIETY *from* 33 FINSBURY SQUARE, *to* THE LONDON INSTITUTION, FINSBURY CIRCUS, E.C.

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THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge, S.E. Meetings: Second and fourth *Thursdays* in each month

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY, Free Library William Brown St. Liverpool. Next Meeting will be held on Monday, September 12th. Paper "Some further researches upon the Genital Structure of Lepidoptera," by F. N. Pierce, F.E.S.

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TO CORRESPONDENTS.

A portrait of G. T. Porritt, F.E.S., ETC., is given with this month's Magazine, forming the seventh of a series of portraits of Naturalists of the Day.

The September part will contain a portrait of Dr. D. Sharp, M.A., M.B., C.M., F.R.S., F.L.S., F.Z.S., F.E.S. Other portraits are in rapid preparation.

Arrangements are now completed for continuing the Molluscan Section. W. A. Gain, Esq., of Tuxford, Newark, has kindly undertaken the Land and Fresh Water Mollusca, and Brocton Tomlin, Esq., of The Green, Llandaff, will attend to the Marine Section. Communications may be made to either of these gentlemen. All letters requiring a reply by post should contain stamp.

The Section for Coleoptera is conducted by G. A. Lewcock, Esq., 73, Oxford Road, Islington, to whom also direct communication may be made.

Mr. Lewcock also represents the Magazine in London, and will receive subscriptions, papers and notes for publication, &c., &c.

Subscriptions, exchanges, business correspondence, notes, papers for publication, and all other communications, to be addressed—JOHN E. ROBSON, HARTLEPOOL.

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THE

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OF

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3. **Fungi, Lichens, etc.,** by Peter Gray.
4. **Mosses,** by James E. Bagnall, A.L.S.
5. **Pond-Life,** by E. A. Butler, F.Z.S.
6. **Seaweeds, Shells, and Fossils,** by P. Gray and B. B. Woodward.
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I have omitted from the present list a large number of minor varieties, while those imperfectly known or at all doubtful from few occurrences, &c., or whose claim to rank as species or varieties is disputed, are printed in *italics*. The following are the more important changes, additions, &c.: *Limax cinereo-niger*, Wolf, is placed as a variety of *L. maximus*, Simroth and Scharff having both conclusively shown that there is no anatomical difference between the two forms. In the genus *Amalia*, Moq., Pollonera's sections have been introduced. The *Testacellidæ* are a family which have not as yet received much attention in this country. I have records of a number of varieties, but hesitate introducing the same until they are found to be of more general occurrence. Many important additions and changes are made in the *Arionidæ*. Pollonera, the highest authority on this family, thinks our large black *Arion* is undoubtedly the *A. empiricorum*, Fér. The many red and brown varieties of this species have been grouped under the v. *rufus*, Fér. The var. *bocagei* is an interesting addition. Under *A. subfuscus* I am introducing two new varieties which will be fully described in my "Review of the *Arionidæ* of the British Isles." *Arion cottianus*, Poll., was first found in this country by Mr. E. W. Swanton, also *A. celticus*, Poll. *A. hortensis*, v. *cæruleus*, Collinge, may be looked upon as a species in course of formation. *A. circumscriptus*, Johnst., seems to vary in two well-marked directions. I have not, as yet, been able to describe the occurrence of *A. lusitanicus*, Mabille, specimens having only just come to hand. Hitherto it has been confounded with *A. empiricorum*, Fér.

The method I adopt for killing and permanently preserving slugs is as follows: After measuring the specimens, while still alive, and making notes as to form, colour, slime, &c., &c. I place them in a 20 ounce beaker of water, *full to the brim*, over which is placed a glass disc with a weight upon it. In this they are allowed to remain until dead, usually about 48 hours. Ten ounces of 12½ % alcohol is then added, and at the end of four hours, the same quantity of 30 % or 40 % alcohol, in which they are allowed to remain another four hours, and then transferred to 60 % alcohol, where they may remain for almost any length of time. I usually, however, after two or three days transfer to 90 % alcohol. It is as well to re-measure the specimens after preparing as above.

As I propose to re-publish this list from time to time, any suggestions for improving the same, or notices of omissions, &c., will be thankfully received.

A CATALOGUE OF THE SLUGS OF THE BRITISH ISLES.

Family.—ARIONIDÆ.

Sub-family.—ARIONINÆ.

Genus.—ARION, Fér.

1 Arion empiricorum, *Fér.*, 1819.
  =A. ater, *Brit. Auctt.*
  a. fasciatus, *Ckll.*
  b. elineolatus, *Ckll.*
  c. swammerdamii, *Kal.*, 1851.
    =marginatus, *Moq.*
  d. razoumowskii, *Kal.*, 1851.
    =nigrescens, *Moq.*
  e. albus, *Fér.*
  f. rufus, *L.*
  g. hibernus, Mab.
  h. bicolor, *Moq.*
  i. pallescens, *Moq.*
  j. albolateralis, *Roebuck.*
  k. *reticulatus*, Roebuck.
  l. *bocagei*, Simroth.
2 Arion lusitanicus, *Mabille.*
3 Arion subfuscus, *Drap.*
  a. succineus, *Bouill.*
  b. griseus, *Cllge.*
  c. lateritius, *Cllge.*
  d. *brunnea*, Lehm.
  e. aurantiacus, *Loc.*
4 Arion cottianus, *Pollonera.*
5 Arion intermedius, *Normand*, 1852.
  =A. minimus, *Simroth.*
6 Arion hortensis, *Fér.*
  a. cæruleus, *Cllge.*
  b. rufescens, *Moq.*
  c. niger, *Moq.*
  d. griseus, *Moq.*
  e. fasciatus, *Moq.*
  f. subfuscus, *C. Pfr.*
7 *Arion celticus*, Pollonera.
8 Arion ambiguus, *Pollonera.*
  a. armoricana, *Poll.*
9 Arion circumscriptus, *Johnst.*
  =A. bourgiugnati, *Mabille.*
  a. flavescens, *Cllge.*
  b. neustriacus, *Mabille.*

Genus.—GEOMALACUS, Allman.

10 Geomalacus malculosus, *Allm.*

Family.—TESTACELLIDÆ.

Genus.—TESTACELLA, Cuvier.

11 Testacella haliotidea, *Cuvier.*
12 Testacella scutulum, *Sby.*
  a. pallida, *Ckll.*
13 Testacella maugei, *Fér.*
  a. viridans, *Morelet.*

Family.—LIMACIDÆ.

Sub-family.—LIMACINÆ.

Genus.—*Limax*, L.

Sub-genus.—HEYNEMANNIA, Malm.

14 Limax maximus, *L.*
  a. marmoratus, *Ckll.*

b. verus, *D. and M.*
c. cellarius, *D'Arg.*
d. maurus, *Held.*
e. pallido-dorsalis, *Hudson.*
f. krynickii, *Kal.*, 1851.
= johnstoni, *Moq.*
g. ornatus, *Moq.*
h. *cinereus*, Moq.
i. obscurus, *Moq.*
j. ferussaci, *Moq.*
k. fasciatus, *Moq.*
l. rufescens, *Moq.*
m. mulleri, *Moq.*
n. luctuosus, *Moq.*
o. maculatus, *Picard.*
p. strobelli, *Pini.*
q. cinereo-niger, *Wolf.*
15 *Limax tenellus*, Nils.

Subg.—Lehmannia, Heyn.

16 Limax variegatus, *Drap.*
=L. flavus, *Auctt.*
a. lineolatus, *Cllge.*
b. maculatus, *Kal.*
c. virescens, *Moq.*
d. rufescens, *Moq.*
e. colubrinus, *Pini.*
f. suffusus, *Roebuck.*
g. griseus, *Roebuck.*
17 Limax marginatus, *Mull.*, 1774
=L. arborum, *B. Ch.*, 1838.
a. nemorosus, *Baud.*
b. decipiens, *Ckll.*
c. rupicolus, *L. and P.*
d. pallens, *L. and P.*
e. alpestris, *L. and P.*
f. fulva, *Norm.*
g. *maculatus*, Roebuck.
h. bettonii, *Sordelli.*

Genus,—Agriolimax, Malui.

18 Agr. agrestis, *L.*
a. griseus, *Ckll.*
b. rufescens, *L. and P.*
c. sylvaticus, *Moq.*
d. *lilacinus*, Moq.
e. reticulatus, *Moq.*
f. tristis, *Moq.*
g. obscurus, *Moq.*
h. nigra, *Morelet.*
i. punctatus, *Picard.*
j. albidus, *Picard.*
19 Agr lævis, *Müller.*
a. maculatus, *Ckll.*

Genus.—Amalia, *Moq.*,

Pirainea section, Poll.
20 Amalia gagates, *Drap.*
a. plumbea, *Moq.*
b. olivacea, *Moq.*
c. rava, *Wllms.*
Tandonia section, Poll.
21 Amalia sowerbyi, *Fér.*
=A. marginata, *Brit. Auctt.*
a. bicolor, *Ckll.*
b. nigrescens, *Ckll.*

Notes.

The Genus Rissoa (cont.)—Sub-genus *Cingula*, Fleming.—The name of this group stands well established, chiefly on the authority of Dr. Gray in 1847, though it was proposed originally for certain *Rissoas* by Fleming as far back as 1828. The shells are all thin, ornamented with spots or bands in their normal form (though *albinos* occur in most species), have a sharp outer tip without a trace of thickening in the most fully adult state. The whorls form a very regular little cone, being flattened and without much suture; the sculpture, too, is very slight, and does not at all affect the contour of the shell. Of this group we have two members in British waters, *R. cingillus*, Mont. (the type of the sub-genus) and *R. semistriata* Mont., both common and littoral in their habitat. For the name *R. cingillus*, Canon Norman and others have recently substituted the undoubtedly prior one of *R. trifasciata*, Adams, but it seems almost a pity to oust such an old friend as *cingillus*. The older name certainly is apt in giving one a clue to the species, as it emphasizes the distinguishing feature of this *Rissoa*, viz.: the three reddish or brown bands on the last whorl, two of them broad and very well defined, the third a shorter one at the base. The rest of the shell usually has a varying yellow tint, while at Weymouth, especially round the Hothe, orange-coloured shells predominate with vanishing bands. Albinos of this species occur sparingly with the type and are known as var. *rupestris*, Forbes. *R. cingillus* is not smooth, but has numerous striæ, distinct on the last whorl, but almost absent above; they are spiral, *i.e.*, running with the coil of the shell and are crossed by still finer lines longitudinally. The length varies slightly up to about 3 mm. The species is gregarious and to be found on almost any stony shore, under stones *deeplv buried* in the shingle, from about half-tide downwards. No criterion will be necessary beyond that of the two clear reddish bands; the third one is not so evident. A pale but not pure-white variety is var. *graphica*, Turton. I am not aware of any other named variety.

R. SEMISTRIATA, Mont., is not such an easy species to identify as the preceding, but I think that as before the easiest feature to rely upon is the colouration. This takes the form of more or less oblong blotches of red at set intervals along the upper margin of each whorl, and a corresponding row of smaller and narrower marks, more streaky along the lower margin. Between these two rows there is a well defined plain area the ground colour being yellowish-white, the markings, as usual, gradually die out towards the apex. The shell is more solid, smooth and glossy than the last species, with a spire less produced; to the naked eye it usually appears to have no sculpture at all; the suture is very slight and the whorls much flattened. It should be looked for alive at low tide under stones (but not those deeply buried, as with *R. cingillus)*, but occurs much more commonly in shell sand and is generally common in dredged materials. The albino form of the species is called var. *pura* Jeffreys, and occurs with the type. Average length 2½ mm. -B. TOMLIN, Llandaff.

THE HYMENOPTERA-ACULEATA OF LANCASHIRE & CHESHIRE,

BY WILLOUGHBY GARDNER, F.R.G.S.

(Continued from page 172.)

NOMADA.

This is the first genus of Parasitical or Cuckoo Bees, as they are often called. These insects, instead of making burrows for themselves and storing up food for their offspring by their own labours, appropriate the fruit of the toil of other bees, and lay their eggs in the carefully constructed and well-victualled cells of various species.

The *Nomadas* are sometimes particular, but more often promiscuous in their parasitism; as far as observation goes, however, the following species appear to be more or less exclusive in the choice of their hosts, viz:—

N. borealis	parasitical	upon	*Andrena Clarkella.*
,, *sexfasciata*	,,	,,	*Eucera longicornis.*
,, *Fabriciana*	,,	,,	*Panurgus ursines,* probably on some *Andrena.*
,, *albogutata*	,,	,,	*Andrena argentata.*
,, *ochrostoma*	,,	,,	,, *labialis.*
,, *lateralis*	,,	,,	,, *bucephala.*
,, *ferruginata*	,,	,,	,, *humilis.*
,, *fucata*	,,	,,	*Halictus leucozonia.* ,, *rubicundus.* *Andrena fulvicrus.*
,, *solidaginis*	,,	,,	*Halictus leucozonius.*
,, *ruficornis*	,,	,,	*Andrena Trimmerana.* ,, *atriceps.* ,, *fulva.* ,, *nigro-aenea.*
,, *furva*	,,	,,	*Halictus morio.*
N. alternata	,,	,,	*Andrena atriceps.* ,, *nigro-aenea.* ,, *albicans.*
,, *Lathburiana*	,,	,,	,, *labialis.*

The species recorded in our district are as follows, viz.:—

NOMADA, Fab.

solidaginis, Panz.—Taken at Rock Ferry, J.T.G.

sexfasciata, Panz.—Recorded from Sale, Eccles and Bollin Valley, J.R.H.

succincta, Panz.—Commonly distributed in district, B.C. Particularly recorded from Chester, E.CT., R.N.; Rock Ferry, J.T.G.; and Huyton Quarry, near Liverpool, H.H.H.

alternata, Kirb.—*Marshamella*, Kirb., Thoms.—Also well distributed, B.C. Noted specially at Chorlton and Stretford, near Manchester, J.R.H.; Rainhill, H.H.H.; Rock Ferry, J.T.G.; Wallasey, E.C.T.; Delamere, E.C.T.; and near Chester, E.C.T., R.N. Observed at burrows of *Andrena albicans*, E.C.T.

jacobææ, Panz.—Taken in Bollin Valley, near Manchester, J.R.H.; and sparingly at Chester, R.N.

Lathburiana, Kirb.—*rufiventris*, Kirb., Thoms.—This local species has been taken near Manchester, B.C.; at Bache Hall, Chester, E.C.T.

lateralis , Panz. *nec* Sm.—*xanthosticta*, Kirb., Sm.—Manchester, B.C. Banks of the Mersey, Charlton, J.R.H.; and Bache Hall, near Chester, E.C.T.

ruficornis, Linn.—Valley of the Bollin, J.R.H.; in Cheshire, H.H.H.; Chester, E.C.T., and described as fairly distributed in district, B.C.

borealis, Zett.—Rivington, Lancashire, B.C.; and taken in Cheshire, H.H.H.

ochrostoma, Kirb.—*punctiscuta*, Thoms.—Hazelgrove, B.C.

ferruginata, Kirb.—*germanica*, Sm.—Taken at Stretford and Bowden, J.R.H.

Fabriciana, Linn.—Fairly distributed in district, B.C.; Stretford and Eccles, J.R.H.; Rainhill, H.H.H.; Chester, E.C.T.

furva, Panz.—Recorded from Bollin Valley, J.R.H.

EPEOLUS.

This genus contains two species, also parasitical upon other bees; their hosts are *Colletes Daviesana, fodiens* and *marginata*.

Epeolus, Latr.

productus, Thoms.—*variegata, pars.*, Sm.—Recorded from Bollin Valley and Sale, J.R.H.

MELECTA.

A genus containing two species, parasitical upon the genus *Anthophora*. *M. luctuosa* attacks *A. retusa* and *M. armata* preys upon *A. pilipes.* These insects have not yet been observed in our district, although both their hosts occur.

CŒLIOXYS.

Another parasitical genus, preying upon *Megachile* and *Saropoda.* Most of the species appear to be more or less promiscuous (always within the limits of the above genera) in their parasitism.

CŒLIOXYS, Latr.

quadridentata, L.—*conica*, Thoms.—Formby, numerous, H.H.H.

elongata, Lep.—*symplex*, Nyl., Thoms.—Formby, H.H.H.; Southport and Cheshire Coast, B.C.; Higher Bebington, J.T.G.; Delamere Forest, E.C.T., R.N.

acuminata, Nyl.—One on Wallasey Sandhills, W.G.

MEGACHILE.

These bees are popularly known as "Leaf-cutters." They burrow gregariously in various situations: in decayed wood, *M. centuncularis* and *Willughbiella*, in the ground, *M. argentata*, *circumcincta*, *maritima*; in the mortar of old walls, *M. centuncularis*; and in sound oak and mountain ash trees, *M lignesceca*, The tunnels excavated in these places they line with pieces of leaves most accurately and exquisitely cut to fit the cavities from various trees and shrubs, more or less according to species. No one species confines itself invariably to one particular kind of leaf, nevertheless the undermentioned plants have been observed to be selected most frequently by the following "Leaf-cutters," viz.:—

Rose by *M centuncularis*, *circumcincta*, and *Willughbiella*.
Mercury by *M circumcincta* and *centuncularis*.
Elm by *M. Lignesceca*.
Laburnum by *M. Willughbiella* and *centuncularis*.
Sallow by *M. maritima*.

(To be continued).

THE DIPTERA OF DORSETSHIRE.

BY C. W. DALE, F.E.S.

(Continued from page 170.)

88. *Erioptera flavescens*, Meig. Occurs on rushes growing in water at Holwell and Middlemarsh, in the end of June and beginning of July.

89. *E. macrophthalma*, Loew. Common at Glanvilles Wootton in July. This used to be confounded with the last, which it much resembles but it is rather a larger species and not of so deep a yellow.

90. *E. lutea*, Meig.=*costalis*. A local species. Occurs at

Glanvilles Wootton, on the banks of a shady brook, from the middle of June to the middle of July. It may be at once recognized by its dark wings.

91. *E. tænionota*, Meig. A very common species throughout the summer.

92. *E. fuscipennis*, Meig. Occurs by the side of shady ditches from July to October.

93. *E. trivialis*, Meig.—*cinerascens*. Common by the side of shady ditches from the end of March to June, and again in September.

94. *Symplecta punctipennis*, Meig. Occurs in May and again in September, but it is not so common a species as the next.

95. *S. stictica*, Meig. A very common species from the end of March to June.

96. *Trimiera pilipes*, Fab. A scarce species. One specimen taken by my father at Glanvilles Wootton on April 30th, 1833, and another at Portland on July 11th, 1839.

97. *Goniomyia lateralis*, Meig. Occurs commonly in a quarry at Glanvilles Wootton in the end of May and in June.

98. *G. sexguttata*, Dale, "Annals of Natural History," 1841. This pretty, rare, and delicate species used to occur in a quarry in the parish of Glanvilles Wootton, but I have found no specimens for the last five or six years. It was only out for a short time, viz.: from the 15th of June to the 2nd of July.

99. *G. tenella*, Meig. Common in shady places at Glanvilles Wootton in June.

100. *Empeda flava*, Schum. Common on grass under trees in July.

101. *E. nubila*, Schum. Common in shady places in May and June, and also in September.

102. *Antocha opalizans*, O.-Sach. Common on the banks of a stream at Glanvilles Wootton and also at Charmouth in June and September.

103. *Rhamphidia flava*, Walk. Common in a shady copse at Glanvilles Wootton in June.

104. *Geranonyia unicolor*, Hal. Occurs on rocks at Lulworth and other places on the sea coast throughout the summer.

105. *Rhipidia anenophora*, Loew. Of this rare species I took two specimens at Glanvilles Wootton in June, 1889.

106. *R. maculata*, Meig. A common species throughout the summer. I have even beaten it from ivy as late in the year as November 8th.

107. *Dicranomyia morio*, Fab. Common in shady places from

April to June, and also from August to October. I have bred it from an Agaricus.

108. *D. Goritiensis*, Mik.=*ornata*. Common amongst the grass growing on the side of cliffs on the sea coast, during spring and autumn.

109. *D. dumetorum*, Meig. Common under trees during the summer.

110. *D. didyara*, Meig.=*oscillans*. Occurs in wet situations in June.

111. *D. lutea*, Meig. Common in June.

112. *D. chorea*, Meig. The commonest of the family. There are two broods; some of the first appearing as early sometimes as the end of March.

113. *D. stigmatica*, Meig.? Closely allied to *chorea* but larger and more robust. It occurs in my garden at Glanvilles Wootton; but is only on the wing for a short time in the end of May.

114. *D. modesta*, Meig. A common autumnal species everywhere.

115. *D. pilipennis*, Egy. A scarce species.

116. *D. sericata*, Meig.=*glabrata*, Walk. A scarce species occurring at Glanvilles Wootton in May.

117. *Limnolina macrostigma*, Schum.=*albifrons*, Walk. Common by the side of wet ditches in June and September.

118. *L. tripunctata*, Fab. A common species through May and June.

119. *L. flavipes*, Fab. Common in June.

120. *L. nubeculosa*, Meig. A very common species in spring and autumn. It is one of the earliest on the wing, and also one of the latest, and I have beaten it from ivy on November 10th.

(To be continued).

THE SECONDARY SEXUAL CHARACTERS OF THE BRITISH COLEOPTERA.

BY JOHN W. ELLIS, M.B. (VIC.), F.E.S.

(Continued from page 165).

THORAX AND ITS APPENDAGES.—What is usually called the thorax in a beetle is really the pronotum or upper surface of the first thoracic segment, and this portion of the body occasionally exhibits some variation in shape in the two sexes. A few examples will suffice. In the Elateridæ *(Athous, Corymbites*, &c.) the thorax is frequently longer and more parallel-sided in the male, a condition which is also present in *Ptinus lichenum;* on the contrary while that of the female *Xyleborus dispar* is cylindrical, that of the male becomes globular. The thorax in the males of the genus *Læmophlæus* are much more narrowed behind than in the other sex; that of the male *Nacerdes melanura* is so much narrowed behind as to become heart-shaped, while the female has this portion quadrangular; an opposite condition obtains in *Eros aurora*, in which the male thorax is narrowed towards the front. The genus *Silis* is at once recognised by the sides of the male thorax being excised and furnished with a tooth. The surface of the thorax of the male *Hydrochus exsculptus* is convex with only two distinct depressions; that of the female is much flatter and has four deep depressions. That of the male stag beetle *(Lucanus)* is flatter and so finely pubescent as to look mealy, while the female has this portion of the body, like the rest of the surface, more convex, shining, and destitute of pubescence. Several of the smaller Brachelytra such as *Ilobates nigricollis*, *Myrmidonia funesta*, *humeralis*, &c., *Homalota divisa*, and *Tachyusa obscura* have the thorax longitudinally channelled in the male, while the female is either without or with a much less distinct channel. A similar condition happens in the males of *Melasis buprestoides*, where the thorax is channelled for its whole length; in the female the groove only exists at the base. The males of several of the *Aphodii (fosser*, *fimitarius*, and *fœtens)*, have a round depression occupying the front of the thorax, which is quite absent in the females. In this genus, too, the male thorax tends to be broader and more parallel sided, while that of the female is more regularly rounded to the front. In the females, but not in the males of *Rhynchites betulæ*, *populi* and *auratus* the thorax is furnished on each side in front with a long spine. The male *Typhæus vulgaris* has three long horns projecting forwards, one from each anterior angle and one from the middle of the front, while the female has simply two little tubercles or a ridge in front. The males of *Bledius spectabilis*, *tricornis* and *unicornis*, in addition to possessing horns springing from the head also have a long horn projecting over the head from the middle of the front of the thorax; the females have the thorax unarmed. In the male of *Cis bilamellatus* the front margin of the thorax is raised in the form of a plate, which with a similar plate on the head leads to its specific name. *Ennearthron fronticorne* has the front of the thorax cut out, with a tubercle or blunt horn on each side of the notch, while *E. cornutum* has a sharp horn on each side. In the males of *Sinodendron* the front angles of the thorax are very sharp and prominent, and a depression in the front is bounded behind by a ridge cut into three conical teeth, so that the thorax appears 5-toothed—a condition which is not present in the female; while in the male of *Copris lunaris* the thorax is deeply hollowed on each side in front with an upright, sharp, and very strong horn or tooth, forming an outer margin to the depression. In the genus *Onthophagus*, remarkable for the horns on the head of the males, there is a tendency for the thorax of the female to become elevated into a rounded protuberance—sometimes two protuberances separated by a groove in front. The lozenge-shaped area situate between the intermediate legs in the *Aphodii*, and which is generally known as the mesosternal (sometimes, but incorrectly the meta-sternal) area almost always differs sexually, and frequently offers excellent points for the discrimination of closely allied species. While in the females it is usually smooth and flat or slightly convex, in the males it is usually more or less depressed and frequently punctured and hairy. The meta-sternum is impressed in the males of *Scaphidium*; that of *Agathidium atrum* is depressed in the male and furnished with a tuft of hair; and in the same sex of *Strangalia nigra* and *armata* the meta-stenum bears two crests of hair.

Elytra.—As appendages of the thorax the elytra will next require our attention, and, since in the great majority of beetles (except in the sub-order Brachelytra) the wing-covers from the most conspicuous portion of the insect's body it will be convenient under the same head to consider some instances where the whole outline of the insect differs sexually either from modification of the thorax and elytra, of the elytra alone, or from absence of these latter organs. Among the Elateridæ, and most noticeable in *Athons niger*, *A. longicollis*, *Sericosomus brunneus* and *Campylus linearis*, the male insect is much narrower than the female which has the outline, especially of the elytra, somewhat rounded. The males of *Gonioctena* and *Lagria hirta* are smaller and narrower than the females, and the same sex of *Blaps mucronata* is also narrower, with the produced tip of the elytra longer than in the female. Several of the *Carabi*, especially *C. violaceus*, have the elytra of the female much more rounded at the sides than those of the male; the female of *Calosoma* is distinctly dilated behind and produced at the apex; *Pterostichus niger* and *vulgaris* have the female elytra altogether broader; the females of *Hydræna* usually have the elytra shorter and broader and more flattened behind; some *Carabi*, especially *C. granulatus* and *nemoralis*, have the elytra of the female very strongly sinuate before the apex; in several species of *Silpha* (*thoracica*, *rugosa*, *sinuata*, e.g.) the elytra of the males are truncate or obtuse, those of the females are sinuate and produced at the sutural angle. The females of several *Aphodii (lapponum*, *fœtidus)* have the elytra distinctly dilated behind, and the same is the case in the females of *Tillus elongatus*. The sexes of at least two species of *Ptinus (lichenum* and *fur)* differ so much in shape as to appear specifically distinct, for while in the male the elytra are oblong, with nearly parallel sides and distinct shoulders, those of the female are nearly globular. The following species have the elytra more narrowed towards the apex in the male: *Dascillus cervinus*, *Toxotus meridianus*, *Strangalia aurulenta* and *armata*, the British species of *Grammoptera* and *Saperda*, *Donacia lemnæ* and *sagittaria*, and many species of the genus *Trichopteryx*. The female of *Choleva angustata* (Cox gives the male which is certainly a mistake) has a sharp spine at the apex of each elytron; *Bryaxis sanguinea* has each elytron produced into a broad lobe in the male; and the males of *Malachius marginellus* and the three British species of *Anthocomus*, together with the same sex of *Axinotarsus pulicarius* and *ruficollis* have the apex of the wing-covers curiously crushed in or doubled under, and frequently furnished with black lobes or appendages. There are a few instances of the presence of ridges or tubercles on the elytra of one sex only, such as the elevation of the suture at its hinder end in the males of *Homalota cinnamomea* and *Silusa rubiginosa*, the elevated ridge lying parallel to the suture on the hinder part of the elytra of the males of all the British species of *Bolitochara* and of *Homalota hepatica*, the raised fold at the shoulders of the female *Prasocuris marginella*, the blunt tubercle near the base of each elytron in the male *Homalota circellaris* and *Sipalia ruficollis*, a similar tubercle near the apex in the male *Brachida notha*, and the fold near the apex of each elytron in the female *Hydroporus latus*. The sulcation of the elytra in the females of *Dysticus* and *Acilius* has been already referred to, but we may note here the curious hollowing out of the apex of each wing-cover in the males of *Xylocleptes bispinus*, *Pityophthorus bidens* and *quadridens*, which depression is bounded externally by a long triangular tooth, represented in the female by a small tubercle only. Only two British beetles are entirely without elytra in one sex, viz.: the glowworm *(Lampyris noctiluca)* and *Drilus flavescens*, in both of which the female is a long grub-like creature, generally much longer than the male, entirely without wings and consequently having all the abdominal segments exposed. The near ally of the glowworm *(Phosphænus hemipterus)* has the female also destitute of wings and elytra, while the male, unlike the male glowworm which has both well developed, has very short wing-covers without any wings to protect.

(To be continued.)

SPRING COLLECTING AT BIARRITZ,

BY MISS K. M. HINCHLIFF.

As the last few years have seen two most excellent works on European Diurni, it is presumed that greater interest is now taken by the British collector in this most interesting branch of Entomology.

Yet, with the exception of occasional notices of collecting in Switzerland, the Magazines very seldom have any notes on localities abroad ; therefore it is with some diffidence that I offer these notes, the result of a five months residence in Biarritz last year, from January 20th to June 18th, 1891, during which time I did my utmost, with my brother's assistance to work the Diurni of the neighbourhood.

To begin with I must say that the result was very disappointing. I not unnaturally expected much from a place so far South, close to Spain, with mountains in the vicinity, yet I obtained but little, 32 species in all, 27 of which are included in the British lists. It is true that my stay did not include the summer proper, also that the unusual severity of the weather for a short time in January may have affected insect life, still the fact remains that with every variety of collecting ground, along the coast, inland, cliffs, common, heaths, valleys, meadow land, marshes, woods, pine forests, etc., etc., there was a lamentable absence of butterflies. After the longest day's collecting I seldom got as good a boxful as can be obtained here. Perhaps the only species that were ever, at any one time, really abundant were *Tages* in April, *Cinxia* in May, and *Brassicæ* the end of May and beginning of June.

I could hear of no collector at Biarritz except a few small boys, and the contents of the museum at Bayonne were temporarily removed pending alterations in the building, so I had no opportunity of seeing a proper collection of the neighbourhood or of judging what it would produce during an average season for the whole year round.

The weather during my stay was at all times similar to that in England but of course warmer. Thus February and the first half of March were unusually fine and warm, from then to the middle of May changeable and unsettled, and comparatively cool, from the middle of May till we left, fine and at times very hot.

Our collecting ground comprised every likely looking spot within a walk or moderate drive of Biarritz, also one day spent at Cambo, nearer the mountains, but even there on a fine day at the beginning of June, there were but few butterflies.

Below is a list of the species taken, with a few notes. The date following each name is that when the insect was first seen or taken, the date in parenthesis is that on which the insect was first noticed here, chiefly this year, from which it will be seen that there is about a months difference.

Night work being impossible I did very little with regard to Heterocera, my notes therefore on them are not inserted.

P. machaon.—May 18th. Scarce, we caught but one specimen and missed two or three others.

P. brassicæ.—April 30th. (End of April). Though an odd specimen (which I did not see myself) was taken the last day of April, it was not till nearly the end of May that it was out in any quantities, then it simply swarmed and the specimens were very fine.

P. rapæ.—March 6th. (April). Common, but at no time as abundant as *Brassicæ* and in no way differing from English specimens.

P. napi.—March 6th. (April). Fairly common.

E. cardamines. March 18th. (April). Not plentiful, the few specimens I took were not so fine as I used to obtain them in Brittany. These had a larger blotch than English specimens.

L. sinapis.—April 15th. (June 6th). Not common, I took a short series of good specimens towards the end of April, all males.

C. edusa.—March 19th. (June 8th). Not at all plentiful, one small ♂ taken on March 19th, one good ♀ and two others missed on June 5th, one worn *Helice* and some others missed on June 15th.

G. rhamni.—February. (April). This was certainly one of *the* species of Biarritz, from February till we left (June 18th) it was always plentiful, and towards the end of that time you could obtain it in every stage, hybernated imagines, ova, larvæ, and pupæ. I should have liked to see whether the old imagines were still on the scenes when the new ones made their appearance. On the 25th April we watched a female depositing eggs, on June 5th we took larvæ in all stages and a few days later were fortunate enough to see one of them in the act of changing to a pupa, many were its struggles and contortions before it finally emerged the lovely and peculiar shaped green chrysalis.

T. rubi.—April 15th. (May 17th). Fairly plentiful in rough places, among gorse, etc.

L. argiades v. polysperchon.—April 25th. This exquisite and delicate little insect was fairly plentiful all through May, the best spot being a field put up for hay in a sheltered valley. The males were more numerous than the females also a trifle larger. They varied from 0·85 to 1·05.

L. baton.—April 30th. Four specimens only taken, one worn ♀, on the date above, on rough ground, one ♂ and two ♀, all good, a month later in a meadow near the town.

L. medon.—May 1st. Four specimens only taken, two ♂ and two ♀, they are a trifle larger than those taken here, but, otherwise, of the same form, as also are specimens I have from the north of France, *i.e.*, the ♀ with a complete border of orange spots, ♂ more or less without the spots at the costa, upper side; the white spots on the underside of both sexes very strongly occellated, particularly on the forewings.

L. icarus.—May 1st. (May 12th). Plentiful and very fine, the largest ♂ measuring 1.4, the largest ♀ 1.3, the latter varied greatly as usual.

L. argiolus.—♂ April 15th; ♀ May 19th. I took a fair series but they were never plentiful, 2 to 3 being the utmost taken in one day.

P. phlæas.—April 2nd. (May 12th). Not common, a few specimens only taken.

M. cinxia.—April 28th. Really abundant, swarmed all through May on cliffs, meadows, and marshes alike. The larvæ were in great numbers all over the cliffs and golf links feeding on plantains. We took and bred a very fine series. Not so green as specimens from North of France.

M. phœbe.—May 1st. Only two really good specimens taken, but possibly some were overlooked on the wing as *Cinxia.*

M. parthenie.—May 25th. A fine form, very bright in colour and the black markings much reduced, the ♀ as large as 1.6, and they vary considerably in the extent and depth of the black markings. Unfortunately having no collection or book with coloured plates with me for reference I took this to be a bright form of *Athalia* so took but a short series. Mr. Kane kindly named it for me after my return. It occurred in a damp marshy spot where there was a rank growth of grasses, rushes, and "mare's tail," etc, with flowers.

A selene.—May 7th. (June 3rd). Not common, I took a short series of ♂ only; chiefly at the end of May. They were large and very rich in colour, all about 1.75, both larger and darker in colour than specimens I have from Vigo taken in July.

A. dia.—March 19th. A solitary specimen was taken at the above date, but it became fairly plentiful from middle to end of April. The best day's bag was 11 after spending several hours in the best spot we could find for it, on the side of a steep hill covered with gorse, and occasional open sandy patches with heath, violet, and *Lithospernum rostratum* growing on them. This species was very swift and strong on the wing for its size compared with the rest of its genus.

V. polychloros.—March 23rd. One worn specimen.

V. urticæ.—Fresh specimen, June 9th. (Hybernated to April). A few hybernated and a few fresh specimens.

V. io.—A few hybernated specimens.

V. antiopa.—April 15th. Several hybernated specimens seen, one only caught, they were extremely difficult to take, being very wary as well as very strong on the wing.

V. atalanta.—February 18th. (End of May or early in June). A few hybernated specimens.

P. mæra.—June 9th.—A few specimens taken at Cambo of the usual lowland form (those I have from Switzerland are much darker and greyer in tone).

P. megæra.—April 18th. (April). A few specimens—did not appear plentiful.

P, ægeria.—♂ March 3rd, ♀ April 2nd. (April). ♂ fairly common, ♀ less so. I took a good series on the whole, all of a beautiful rich tone, fully as fulvous as *Megœra*. I have specimens from the North of France which are intermediate in tone between *Ægeria* and our *Egerides*, through rather nearer the latter, probably if the species was collected systematically from England to South of France no line could be drawn between *Ægeria* and *Egerides*.

E. janira.—♂ June 2nd. (♂ June 22nd. ♀ July 21st., 87). Males only were out before we left, they were the largest I have ever seen, measuring 2.1 and nearly approaching to the var. *hispulla*. I was very sorry not to be able to obtain females.

C. pamphilus.—April 15th. (May 17th). Common in rough heathy places. The specimens were rather larger and the brown border rather deeper than ordinary English ones

S. malvæ.—April 3rd. (May 7th). Fairly plentiful, the under side hind wings rosy red.

N. tages.—April 14th. (May 7th). Pretty abundant and in no way differing from English examples.

In conclusion, I should like to mention that I have this year in the same time taken here three-fourths of the total number of Diurni taken or seen at Biarritz, nineteen of them being the same species, *i.e.—Brassicœ*, *Rapœ*, *Napi*, *Cardamines*, *Sinapis*, *Edusa*, *Rhamni*, *T. Rubi*, *Icarus*, *Phlœas*, *Selene*, *Urticœ*, *Io*, *Atalanta*, *Megœra*, *Ægeria (v Egerides)*, *Pamphilus*, *Malvœ* and *Tages;* the remaining five being:—*Euphrosyne*, *Cardui*, *Athalia*, *Artemis* and *Sylvanus*. The species taken at Biarrity and not here, being *Argiades* var. *Polysperchon*, *Baton*, *Medon*, *Argiolus*, *Cinxia*, *Phœbe*, *Parthenie*, *Dia*, *Polychloras*, *Antiopa*, *Mœra* and *Janira*, two of which may be out now. This suggests the reflection, that the situation being somewhat similar, the 7½ degrees of latitude between North Devon and Biarritz do not make as much difference in the insect life as might have been imagined; though, of course, last year may have been an unusually bad year there, whereas this promises to be an unusually good one here.

Worlington House, Instow., June 16th, 1892.

RANDOM NOTES ON BRITISH LEPIDOPTERA.

BY JOHN E. ROBSON.

New Species of Coleophoræ.—Mr. John H. Wood, in the "Entomologist's Monthly Magazine" for May, June, and July last, contributes an interesting paper on "Our Rush-feeding Coleophoræ," in which he introduces to our notice three new British species, two being new to science. In the "Manual," he tells us, only two rush-feeding species are given *(C. murinipenella* and *cæspititiella)*, both inland species. Since then, two others *(adjunctella* and *obtusella)*, both exclusively coast insects, have been added. Mr. Wood's attention was directed to the ovipositors of the species, and it is the result of this investigation, which he gives in detail in the article referred to. As the three new species, as well as the other two inland species, occur within three or four miles of his own door, he thinks it more than likely that other species are waiting to be differentiated, indeed he intimates that he has another himself, only waiting emergence to be described. His new species are thus summarized:—

Sylvaticella, n. sp.—A large insect; forewings greyish white. Flies in woods in May. Larva on *luzula sylvatica;* two years in feeding up.

Alticolella, Zell. (new to Britain). A small insect; forewings yellowish; antennæ annulated in the inner face with pale fuscons. In fields and woods, in July. Larva on *Juncus lamprocarpus*, more rarely on other species, in autumn and early winter.

Glaucicolella, n. sp.—Very like *cæspititiella*, but yellower; antennæ as in *cæspititiella*, or sometimes in ♀ entirely white. Flies in July. Larva on several kinds of *Juncus*, most partial to *J. glaucus*, not full fed till spring, case whitish.

It is exceedingly interesting to find, whilst our friend, Mr. Pierce, is settling many of our difficulties by an investigation of the genitalia of the males, that the ovipositors of the females present equally trustworthy characters, where the ordinary superficial ones are barely sufficiently for our purpose."

Deiopeia pulchella.—Mr. South, in the "Entomologist" for July, gives an account of the occurrences of this pretty species in Britain since 1869. From this I find there were 30 specimens recorded in 1871, 18 in 1874, 24 in 1875, 23 in 1876, and only 31 in all the other twenty years, 8 of which have been taken this year. Since the publication of the article other four specimens have been recorded, making the present one of the best year for the species. Mr. South writes:—"I am not aware of the larva of the species having been found in England," but Mr. E. L. Layard, in the field for 18th June last states that his late wife "took several examples of *Deiopeia pulchella* in the larval and perfect stages." Mr. Layard does not give the date, but speaks of it being 51 years ago, which gives the year 1841. Mr. South concludes that the species is probably an immigrant, though not in the sense of being blown from the French coast. Mr. McLachlan records ("Entomologist's Monthly Magazine," Vol. XXII., p. 12,) the occurrence of a swarm of this insect, in Lat. 0° 47′ N., lat. (lon. 32° 50′ W.,"—"960 miles, S.W. of the southernmost of the Cape Verde Islands, from which he thinks they had been blown. Capt. Renaut, who communicated this occurrence, stated that there were many hundreds of them about the ship. No species is more frequently brought me by seafaring friends than *D. pulchella*, and more than once they have been captured when the vessel was over 300 miles from land. It is evidently an insect with strong migratory propensities.

Since the above was in type I have been favoured with a communication from Mr. Layard on the subject, in extension of the note in "The Field." Several examples of the larva were found, and what was more satisfactory the perfect insect was bred. The number was not large, as, owing to the curiosity of a servant girl, several of the larvæ escaped. Mr. Layard also mentions that the larva was carefully figured and the drawing sent out to him in Canada, and he believes the sketch is still in existence, though he was unable to find it before writing to me.

PLUSIA MONETA.—It would almost seem that this pretty *Plusia* had established itself in England, several specimens having been taken in the Southern Counties. The most interesting record is by Mr. R. A. Dallas Beeching, who took three specimens at Tunbridge Wells on the 11th, 12th, and 14th July, at light not far from the place where he took one in 1890. Light appears to have great attraction for it, it will be remembered the first specimen was taken in a moth trap, at light.

VANESSA C-ALBUM.—From the report of the South London Entomological Society at p. 197, it would appear that some doubts are yet entertained whether there are one or two broods of this species. The doubt is probably kept up by the want of personal acquaintance with the butterfly and also from the statement in Newman's "British Butterflies," p. 50, where he says "An idea seems prevalent that there are two broods in the year—the first emerging from the chrysalis in June and July, the second in August and September. I think this is a mistake; I have been unable to obtain satisfactory evidence of any caterpillars prior to those so abundant in the winter months about the season of hop-picking." A few years ago I was able, through the great kindness of Mrs. Hutchinson, of Leominster, to investigate the matter most fully, and it is not only absolutely certain that there are two broods of the butterfly every year, but it is the easiest thing in the world to separate the broods, as well as the sexes, from an examination of the perfect insects only. If anyone with a tolerably good series of the species will take the trouble to examine the undersides of the wings, they will find four distinct types of marking and colouration. The first is dull dark brown, almost without markings; the second is of the same colour, but is richly varied with different shades of brown and green, the latter colour being most prevalent towards the hind margin of the wings; the third may be called fulvous yellow, with very slight markings, but not so uniform as the first form; whilst the fourth is also fulvous yellow, but much varied with other shades of yellow, pale brown, and green. The four forms are so distinct that if only one of them be examined, it may be said with certainty to which it belongs. The commonest form is that with brown underside, and it is produced from the larvæ found so abundantly in some years by the hop-pickers. The butterfly emerges late in September, in October, and I have had it emerge in November. These hybernate, re-appear in the Spring, and lay their eggs on currant or nettle, producing the early summer brood, the undersides of which are of the fulvous yellow forms described above. In both broods, those with plain, almost uniformly coloured undersides are the females, and those much mottled and varied are the males. Perhaps the following will make it quite clear:

Early Summer Brood.	Underside: Fulvous-yellow.	Few Markings.—Female.
		Much Varied.—Male.
Autumn Brood.	Underside: Dull Brown.	Few Markings.—Female.
		Much Varied.—Male.

As the autumn brood hybernates, it is quite possible to capture specimens with brown undersides almost simultaneously with the earlier specimens of those having yellow undersides, which are their direct progeny, but such examples will be too much worn for any doubt to arise. I have referred, so far, to the undersides, and they are by far the best guide for separating the broods and sexes. If, however, a series of these butterflies be arranged in this manner, it will be found that the early summer brood are perceptibly paler in hue than those of the autumn brood. I would not say that every specimen could be placed in its correct position by an examination of the upper side, but the difference is clear enough when they are once correctly placed. It is said, that if a lie has twenty minutes start, it will travel all round the world before it can be overtaken. So of a scientific error. Though I fully explained all this in the "Young Naturalist," Vol. II., pp. 108-110; and though the facts are correctly given in Dale's "British Butterflies," pp. 169-174, Newman's error continues to crop up again and again. The early summer brood is the var. *Hutchinsoni.*

Reports of Societies.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

July 28th.—C. G. Barrett, Esq, F.E.S., President in the chair. Mr. Frohawk exhibited seven specimens of *Epinephile hyperanthus*, bred from ova. The female parent which was taken in the New Forest was of the ordinary form, possibly the male was of the lanceolate form, as out of the seven bred, no less than three were of this variety, also a variety of *Sesia formiciformis*, having the usual red colour replaced by burnished gold and also living pupæ of *Colias edusa*, *Vanessa cardui*, and *Vanessa atalanta.* Mr. Frohawk stated he had obtained seventy pupæ of *Colias edusa*, the ova having been obtained from two females taken in the spring, he also remarked on the abundance of *Vanessa atalanta*. Mr. Rice exhibited on behalf of Mr. Hickling lepidopterous ova on stems of asparagus for naming, and Mr. T. W. Hall suggested that probably they were *Triphæna pronuba*. Mr. South exhibited *Zygæna trifolii*, out of a number taken in Middlesex, these shewing great variation in the size and colour of the spots, in the colour of the hind wings, and in the width of the border of the hind wings, and stated the series exhibited contained all the known varieties, also *Asthena blomeri*, taken in Buckinghamshire near the London border and made remarks thereon. Mr. C. G. Barrett. *Vanessa C-album* and pointed out difference between the first and second broods, a discussion ensued, the general opinion being that the species was certainly double brooded. Mr. Frohawk remarked that he had recently been to the New Forest and although the weather was bad he took three white spotted specimens of *Argynnis paphia*, the variety *valezina* was fairly common, and *Limenitis sibylla* exceedingly so, and very late in its appearance.

August 11th, 1892.—The President in the chair. Mr. West (Streatham) exhibited a series of *Apamea ophiogramma*, and *Eupithecia succenturiata*. Mr. Barrett remarked that the former species was very dark and one specimen unusually so. Mr. J. A. Cooper said *ophiogramma* was frequently taken at Chingfood. Mr. Russell a handsome specimen of *Pieris napi*, from Woking, the upper wings being strongly suffused with black and the spots unusually large. Mr. Barrett said the specimen was much more strongly marked than those from the North of Ireland. Mr. Russell also exhibited a series of *Epinephile janira*, males and females from Abbotts Wood, one male shewed the orange coloured blotch in imitation of that of the female which Mr. Barrett observed was the form found in the more northern and western range of the species. Mr. Short referred to the exhibit made by Mr. Rice at the previous meeting, of ova deposited on Asparagus, and in supporting Mr. T. W. Halls identification showed ova of *Triphæna pronuba*, on rush. Mr. Hawes exhibited a larvæ of what he originally thought to be *Hesperia comma*, but remarked that its lateness in that stage had made him feel doubtful as to its identity and he was now satisfied that it was *Nisoniades tages*; a discussion ensued in which it was pointed out by Mr. Frohawk that the larva of *comma* was distinguishable from *tages* by the white markings on the tenth and eleventh segments and which were to be found on the underside. Mr. Hawes also called attention to the tendency to lightness in colour in many species of butterflies during the present season, and gave as instances the extra brilliancy of the blue in the second brood of *Lycæna icarus* ♂ 's and the large proportion of the ♀ 's of that species which were blue. A discussion took place in which

Messrs Carpenter. Frohawk, Barrett, Hawes, and Carrington took part. The President read a letter from Mr J. Jäger in which he reported the capture of *Callimorpha hera*, from South Devon on the 6th inst., and stated that as there were still a number of unbelievers regarding the genuineness of this beautiful moth, he felt it necessary to again come forward in its defence, as he felt sure that anyone who knew the country, intersected as it was by wooded mountains and tracts of marshland would, he was sure, never favour the theory that it had been artificially planted there.—H. W. Barker, and A. Short, *Hon. Secs.*

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

Thursday, August 4th.—Exhibits.—Mr. Tremayne, a bred series of *Callimorpha dominula* from Deal, and *Melitæa athalia* from Abbot's Wood. Mr. Machin, *Mamestra anceps*, a variety of *Acronycta psi*, dark forms of *Boarmia abietaria* and a series of *Phlæodes demarniana*. Mr. Smith, *Thyatira derasa*, *Triphæna fimbria*, *Pericallia syringaria*, *Cleora lichenaria* and *Hyria auroraria* from Lyndhurst, and *Sesia ichneumoniformis* from Swanage. Mr. Bellamy, *Thyatira derasa*, *T. batis* and *Leucania turca* from Highgate Woods and *Dicranura furcula* from Southend. Mr. Hollis, a yellowish variety of *Abraxas grossulariata* and ichneumons bred from *Selenia illustraria*. Dr. Buckell, a series of *Amphidasys betularia* bred from one batch of eggs. One specimen of these had the ground colour almost ochreous, while the dark markings seemed to have lost their intensity. He also exhibited a variable series of *Noctua festiva*, all taken in one evening at Highgate Woods, one of them having the dark dot beneath the discoidal spots expanded into a distinct claviform mark. Mr. Clark, a specimen of *Grammesia trilinea* var. *bilinea* and a fine variety of *Polyommatus phlæas*, both from Abbot's Wood. The latter had a broad black hind marginal band on the forewings, reaching to, and including the transverse row of spots. Mr. Battley, a bred series of *Phorodesma smaragdaria* and various preserved larvæ showing a system of retaining the colour by stuffing with green silk. Mr. Milton, *Colias edusa*, *Sesia tipuliformis*, *Notodonta dictæoides* and *Scotosia certata*; also a living example of a rare species of Diptera, *Stratiomys riparia*, of which he had recently taken specimens at Gravesend and Stamford Hill. Coleoptera—Mr. Heasler, *Scaphidium 4-maculatum*, *Mycetoporus lucidus*, *Megapenthes sanguinicollis* and *Malthinus frontalis*. Mr. Machin stated that he had recently bred *Notodonta dictæoides* from ova deposited last May, proving that this species is occasionally double brooded.

August 18th, 1892.—Exhibits.—Lepidoptera: Mr. Smith, *Hesperia lineola*, *Acidalia immutata* and *A. emarginata* from Leigh, Essex, also a series of *Pamphila actæon* from Swanage. Mr. Tremayne, *Bombyx quercus* bred from Larvæ taken at Deal; also *Hemithea thymiaria* and *Phorodesma bajularia* from the New Forest. Mr. Nicholson, a series of *Vanessa cardui* bred from ova from Chattenden. Mr. Bacot, a ♀ *Colias edusa* and a series of *Noctua festiva* from Epping Forest. Mr. Broomfield, a fine ♀ of *Argynnis paphia* from Ringwood having a very distinct suffusion of dark green on the upper side, closely approaching the var. *valezina*, and a fine blue tint on the underside; also *Lasiocampa quercifolia*, *Triphæna subsequa* and *Heliothis dipsacea* from the same locality. Mr. Allbuary, *Colias hyale*, a fine series of *C. edusa* including the var. *helice* and a series of *Odonestis potataria* from Abbey Wood. Mr. Huckett, *Halias quercana*, *Noctua rhomboidea* and examples of a third brood of *Selenia illunaria* from Epping Forest. Coleoptera.—Mr. Heasler, a number of "weevils" from Wimbledon, including *Phytobius waltoni*, *P. comari* and *Balaninus cerasorum*.—A. U. Battley and J. A. Simes, *Hon. Secs.*

Erratum.—In the report for July 21st, *Brit. Nat.*, p. 174, 4th line from bottom, after "larvæ" insert "of Sphinx ligustri, Mr. Southey series"

NATURALISTS OF THE DAY.

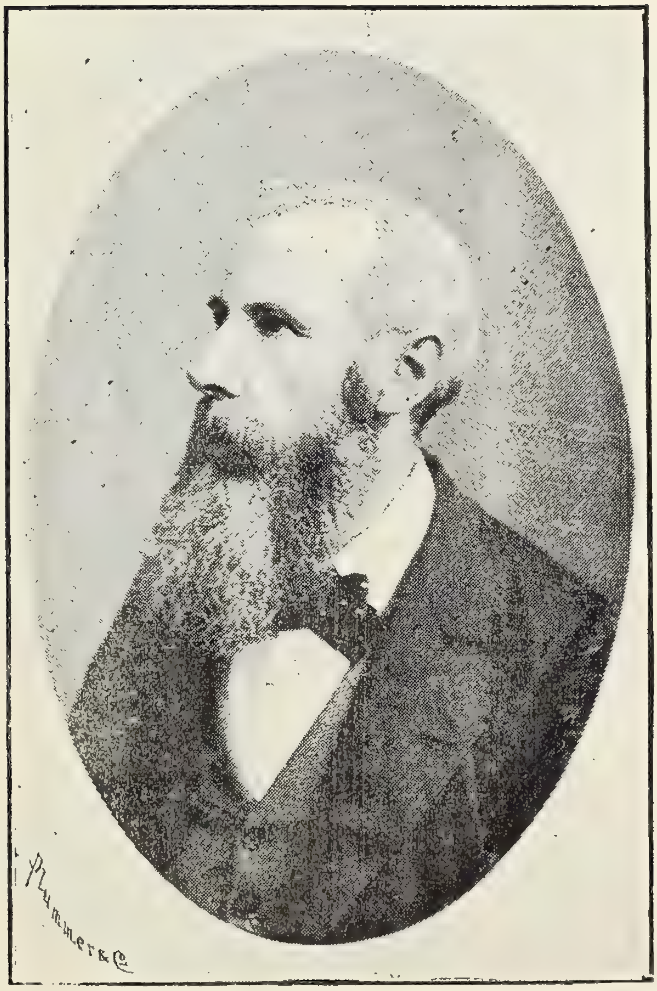
VIII.—DAVID SHARP,

M.A., M.B., C.M., F.R.S., F.L.S., F.Z.S., F.E.S., ETC.

David Sharp was born in 1840. Probably in his case, as in so many others, the naturalist "was born, not made," for as a little boy he was enormously delighted with a small 8vo. volume that came into his possession, stated to be an introduction to the Linnæan system of Zoology, but which was merely a brief sketch, accompanied with rough figures of some of the better known animals. When a little older, Sharp had the good fortune to be for some years the daily companion of Herbert Spencer, who encouraged him in his taste for collecting and rearing specimens, and interested him very much in the questions afterwards discussed by Darwen in the famous "Origin of Species." He had, however, no special entomologist amongst his circle of acquaintances, and it was not till he met with copies of the beginning of Stainton's "Manual of Butterflies and Moths," and his "Entomologist's Weekly Intelligencer," that the lad became aware that any systematic detailed work was carried on in collecting and studying insects. Just about the same time, by a happy accident, he made the acquaintance of Mr. J. R. Hind, the well-known astronomer, who, at that time was much interested in butterflies and had a good collection of those of Europe. The kind way in which this gentlemen treated the lad, and the sight of his collection, confirmed the youngster's nascent taste for Entomology. Originally he was, like so many others, chieflly interested in Lepidoptera, but under the impression that the others were more neglected, and that he had a better chance of doing useful work in them, he abandoned the Lepidoptera, exchanging his collection thereof with the late Henry Edwards and T. V. Wollaston for Coleoptera, and has since devoted his entomological activity chiefly to the study of the latter order. He has always been anxious to encourage the study of the neglected orders of insects, and has himself discovered, for the first time in Britain, several species of them.

General Notes.

MICRO-LARVÆ FOR THE MONTH.—We cannot help noticing when September arrives that the season of flowers is passing away, although many, during the earlier portion of the month, are still to be seen in all their beauty, but as the days pass on, the seed pods and seed heads begin to appear, and with them the larvæ of the numerous



DR. D. SHARP,

M.A., M.B., C.M., F.R.S., F.L.S., F.Z.S., F.E.S.

BRITISH MUSEUM
NATURAL HISTORY.

species of Micro-lepidoptera that feed upon them, the hedgerows and waste places at this time literally teem with an abundance of ripening vegetation, that gives plenty of occupation to the assiduous worker in his eager search after some of the rarer or unknown larvæ. The hawthorn is now at its full growth, and by examining its leaves we notice some have a slight web across them, causing them to contract slightly; under this web will be seen the brown-striped, yellowish larvæ of *Swam. pyrella*, and some of its leaves are turned over into a sort of cone by the larvæ of *Ornix anglicella*, and on its leaves the flounced cases of *Col. paripennella.* The larvæ of *P. tristana* will now be found drawing the leaves and shoots of the wayfaring tree *(Viburnam lantana)* together, the larvæ of *P. dorasana* is now to be taken in folded leaves of *Rhamnus frangule*; they fold the entire leaf over, forming a sort of pod; and feeding in the seed heads of ragwort, the larva of *G. nigromaculana.* The very conspicuous seed pods of the bladder campion *(Silene inflata)*, which is seen occasionally in profusion on hedgebanks of meadows and cornfields, have the unripe seeds eaten by the larya of *Col. inflatella.* The white cases of the larva of this species are very conspicuous as they are fixed at right angles on the seed pods, it is as well to take a good supply for they are very local. The seed heads of the hawkweeds *Hieracium* should now be examined for the larva of *E. dubetana*, and the leaves of the wild convolvulus for the larva of *B. somnulentella*, these larvæ mine the leaves between the upper and lower cuticle and are very erratic in their appearance, being seen in profusion one year and then disappearing for several years. Now is the time to collect the fallen acorns for the larva of *C. splendana* and *juliana*, and the beech nuts for the larva of *C. grossana*, we can also take the larvæ of *D. malvella* in seeds of hollyhock, and those of *G. vibella* in seeds of mallow growing in sandy places. The thistle leaves are being conspicuously mined by the larvæ of *G. acuminetella*, and the long whitish cases of *Col. therinella* will now be found on the underside, the larvæ of *G. atriplicella* is now to be seen in a sort of silken gallery among the seeds of *Chenopodium*, and those of *G. triparella* between united oak leaves. The pinkish larva of the very beatiful *Cosmop. drurella* may now be seen mining along the midrib of the leaves of wild hop, which spreads itself over the hedges in many places. The cones formed by the larva of *Grac. stigmatella* are now to be seen on leaves of poplars and sallows, and those of *Grac. aurogutella* on Hypericum. The very curious snail like tracks on the leaves of Poplars now to be seen, are formed by the larvæ of *Phyl suffusella*; and in turned down leaves of wild apple the larva of *Ornix guttella* may now be taken; the seeds of Angelica should be examined for larvæ of *Œ. flavimaculella*, and hawthorn berries collected for larva of *Lav. atra*, the larvæ of that little gem *A. trietskiella* is now to be seen busily mining the leaves of the dogwood *(Cornus sanguinea)* when full grown they cut out oval cases and drop to the ground, remaining among the rubbish till the following season, there are also many other species of *Coleophora* to be taken this month besides those mentioned above, all of which must be left to the full force of wind and rain during the winter months. On the leaves of Alders the larva of *Bucc. cidarella* are now feeding, and will soon be spinning their long ribbed cocoons on the stems of the branches, and the pretty little *Cemiostoma laburnella* may be seen forming their concentric looking mines in the leaves of the laburnam; many of that large family of exquisite little gems the *Nepticulæ* are now beginning to make their serpentine galleries in various leaves, but they are best left till next month, for being nearer full growth we shall have a much better chance of rearing them., G. ELISHA, Shepherdess Walk, City Road N.

ABUNDANCE OF CRAMBI IN SCOTLAND.—This season appears to have been a good one for these pretty little moths. All the commoner sorts such as *Crambus tristellus*, *Culuielus*; and *Pratellus* were as usual, abundant at Aberdeen. *Perlellus* and var. *Warringtonellus* and *Hortellus* swarmed on the Moroyshire Sandhills, but they do not occur at Aberdeen. I have taken the latter at Muchalls in Kincardineshire. *Dumetellus* was abundant on the sandhills both at Aberdeen and Burghead, Morayshire. *Margaritellus* I turned up in abundance (for the first time in my experience) at Monymusk, Aberdeenshire and I was ably assisted by Mr. J. P. Hutch, of London, in securing a splendid series. Mr. Hutch displayed most wonderful ability and energy in catching these moths on the rough mountain side. Perhaps my best capture is six fine specimens of *Myellus* likewise taken at Monymusk, four of them I netted in a garden at Honeysuckle and two by Mr. Hutch in a clover field close by and which he kindly presented to me. They were all taken flying at dusk about 9 o'clock in the evening, I think this is the principal cause of their present rariety. I am convinced that when their habits are better known that they will prove to be a common and perhaps a garden insect.—ARTHUR HORNE, Watson Street, Aberdeen, N.B.

EDUSA AND HYALE AT COLCHESTER.—*Edusa* and *Cardui* are both common here now, and somewhat variable, but the former is not so common at present as it was in the great *edusa* year. *Hyale* is very rare, my two sons have each taken a single specimen, but I have not met with it myself., W. H. HARWOOD, Colchester.

NYSSIA ZONARIA AT FRODSHAW MARSH.—*Nyssia-zonaria* larvæ were taken abundantly by the members of the "Warrington Field Club." during their ramble to Frodshaw marsh on 23rd July. They did not appear to be at all locally confined, but were common in all the grassy meadows we tried. The larvæ were extended along the stems of *Centaurea*, *Lotus corniculatus*, grasses &c., and being full grown were rather conspicuous and easily seen. It is rather interesting to find this pretty species in hay fields, and in a new locality some 12 or 13 miles from Wallsey where it was first discovered, and which was long believed to be its only habitat. There is little doubt buf if well looked for, it will be found to occur in many other places.—JOS. COLLINS, Warrington.

BRITISH MUSEUM
Prest 2 SEP 92

EXCHANGE.

*Lepidoptera marked * are bred.*

DUPLICATES.—A. Cratægi, H. Sylvanus, Statices, Loniceræ, Senex, Griseola, Anachoreta, Apiciaria, Immutata, Laminata, Dealbata, Strigillaria, Sparsata, Pudorina, Despecta, Phragmitidis, Negricans, Umbrosa, N. Rubi, Pastinum, Barbalis, Farinalis, Phragmitellus, Consociella, Chlorana, Dumetana, Conchana, Inopiana, Trigeminana, Scopoliana, Cruciana, E. Augustana, Misella, Pullella, Geoffrella, Albistria, Epilobiella, Crepusculella, etc.

DESIDERATA.—C. Album, Aataxærxes (undersides), Cassiope Betulæ, Meliloti, P. populi, Dolobraria, iniata, Fuciformis, Fasciaria, Lunaria, Heperata, Sylvata, Cambricarina, Fumata, Salicata, Hexapterata, Firmata, Impluviata, Rubiginata, (Scotch), Hastata, Rubidata, Psittacata, Miata, Russata, Immanata, Silaceata, Hamula, Lacertula, Dictaea, Dromedaius, Duplaris, Glandifera, Ligustri, Menyanthidis, Ripæ, Præcox, Cespitis, Gilvago, Aurago, Lutulenta, Nigra, Herbida, Carpophoga, Luctuosa, Crassalis. I. W. TUTT, Westcombe Hill, S.E.

EXCHANGE.—Duplicates: A. Blomeri, T. punctata, biundularia, E. satyrata, laricata, A. ulmata, Z. loniceræ, bred. Desiderata very numerous.—W. HEWETT, 12 Howard-street, York.

DUPLICATES.—Cinxia, Statices (Guernsey), Emutaria (few), Lunigera, Lucernea, Herbida, Hepatica, Brunnea, Triangulum, Lithoxylea, Pastinum, Anceps, Derasa, Conigera, Nebulosa, Duplaris (few), Viretata, Viridata (few), Russula ♂, Z. trifolii, Irrorella, Spilodactyla, Pupæ of Geminipuncta. Desiderata: Extersaria, Fuscula, Leporina, Xerampelina, Aurago, Menyanthidis, Dahlii, Lutulenta, Nigra, and offers.—ALBERT J. HODGES, 2 Highbury Place, London, N.

DUPLICATES.—Fine Lubricipeda var. Radiata and intermediate forms; accepted offers only replied to at this time of the season.—J. HARRISON, 7 Gawber-road, Barnsley.

EXCHANGE.—Desiderata: Sinapis, T. rubi, W. album, Pruni, Agestis (South of England), Ægon ♀, Iris, Polychloros, Adippe, Paphia, Epiphron, Ægeria, Megæra, Hyperanthus, Actæon, all the clearwings but Tipuliformis, Porcellus, Elpenor, Ligustri.—JOHN E. ROBSON, Hartlepool.

EXCHANGE.—Melanism and Melanochroism—I am working at this subject and will be obliged if any one who takes dark forms of Lepidoptera will communicate with me. I especially want information respecting those species that have assumed darker hues during recent years.—JOHN E. ROBSON, Hartlepool.

WANTED.—Collectors to look through their duplicates for old, chipped, crippled, deformed, damaged and utterly useless Male Lepidoptera with bodies; will pay postage or endeavour to make a return,—F. N. PIERCE, 143 Smithdown Lane, Lverpool.

EXCHANGE.—Duplicates: Jacobæa, Carpini, Haworthii, Silago, Zonaria, Pilosaria, and many others. Desiderata:—Elpenor, A. urticæ, Versicolora, Papilionaria, and offers.—J. W. BALDWIN, 472 Darwen Road, near Bolton, Lancashire.

DUPLICATES—Cardamines, Rhamni, Corydon, Paphia, Cardui, S. populi, Menthastri, Dispar Neustria, Vinula, Cæruleocephala, Ianthina, C. nigrum, N. rubi, Litura, Vaccinii, Satellitia, Cerago, Ferruginea, Chi, Oxyacanthæ, Meticulosa, Protea, Oleracea, Testacea, Nupta, Scutulata, Pilosaria, Illunaria, Elinguaria, Tiliaria, Pennaria, Miata, Prunaria, Maculata, Desiderata, very numerous, also ova, larvæ and pupæ.—W. E. BUTLER, Hayling House, Oxford road, Readings.

MEETINGS OF SOCIETIES.

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY The London Institution, Finsbury Circus, E.C. Meetings: First and third *Thursdays*, in the month.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge, S.E. Meetings: Second and fourth *Thursdays* in each month.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY, Free Library William Brown St. Liverpool. Next Meeting will be held on Monday, September 12th. Paper "Some further researches upon the Genital Structure of Lepidoptera," by F. N. Pierce, F.E.S.

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TO CORRESPONDENTS.

A portrait of Dr. D. Sharp, F.E.S., ETC., is given with this month's Magazine, forming the seventh of a series of portraits of Naturalists of the Day.

The next to appear will be a portrait of the Rev. O. P. Cambridge, of Bloxworth. Other portraits are in rapid preparation.

Arrangements are now completed for continuing the Molluscan Section. W. A. Gain, Esq., of Tuxford, Newark, has kindly undertaken the Land and Fresh Water Mollusca, and Brocton Tomlin, Esq., of The Green, Llandaff, will attend to the Marine Section. Communications may be made to either of these gentlemen. All letters requiring a reply by post should contain stamp.

The Section for Coleoptera is conducted by G. A. Lewcock, Esq., 73, Oxford Road, Islington, to whom also direct communication may be made.

Mr. Lewcock also represents the Magazine in London, and will receive subscriptions, papers and notes for publication, &c., &c.

Subscriptions, exchanges, business correspondence, notes, papers for publication, and all other communications, to be addressed—JOHN E. ROBSON, HARTLEPOOL.

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THE DIPTERA OF DORSETSHIRE.

BY C. W. DALE, F.E.S.

(*Continued from page* 185).

121. *L. quadrinotata*, Meig. Occurs at Glanvilles Wootton, in August, amongst oak underwood.

122. *L. bifasciata*, Schraub. A common species from July to September. This and the last seem to differ from their congener in frequenting dry open places in copses.

123. *Ephelia marmorata*, Meig. Common in shady situations in May and June.

124. *Idioptera trimaculata*, Zett., rare. Taken by my father near Bournemouth on May 1st, 1867.

125. *Poecilostola punctata*, Schrank. A scarce species occurring on the banks of the stream at Glanvilles Wootton in April and the beginning of May.

126. *P. pictipennis*, Meig. Figured by Henrich Schœffer as *fuscata*. A scarce species and much smaller than the above; it occurs on the banks of the stream at Glanvilles Wootton in the end of May.

127. *Epiphragma picta*, Fab., figured by Curtis as *ocellaris*. Occurs at Glanvilles Wootton in June, but is not common.

128. *Limnophila meigenii*, Ver.=*nigricans*, Maeq. Occurs at Weymouth and Bournemouth in May and June. Although it does not occur at Glanvilles Wootton, it is a widely distributed species as I have taken it in the Shetland Isles.

129. *L. dispar*, Meig.=*punctum*. Occurs at Glanvilles Wootton in June.

130. *L. lineola*, Meig. Occurs at Glanvilles Wootton in May and September.

131. *L. lineolella*, Ver. Occurs at Glanvilles Wootton in June.

132. *L. aperta*, Ver.=*fulvescens*, Hoff. Common in rushes through the summer.

133. *L. ferruginea*, Meig. Common on rushes in June and

134. *L. ochracea*, Meig. Common from May to July.

135. *L. bicolor*, Meig. Occurs at Weymouth in May and June.

136. *L. fuscipennis*, Meig. Occurs at Glanvilles Wootton from June to August.

137. *L. discicollis*, Meig. Common from May to July.

138. *L. lucorum*, Meig. Common from June to August.

139. *L. nemoralis*, Meig. Common in woods in June.

140. *L. filata*, Walb.=*angustipennella.* Occurs in marshy situations at Glanvilles Wootton in May and June.

141. *L. senilis*, Hal. A scarce species occurring in wet places in woods at Glanvilles Wootton.

142. *Trichocera annulata*, Meig. Common in the winter, more especially in November.

143. *T. hiemalis*, Dieg.—Common from October to April. This is the commonest of the genus.

144. *T. fuscata*, Meig.—Common amongst bracken in November.

145. *T. regelationis*, Linn.—Common throughout the winter.

146. *Ula. pilosa*, Schum.—Common on the banks of wet ditches throughout the summer.

147. *Dicranota panida*, Hal.—Common on the banks of wet ditches throughout the summer.

148. *D. bimaculata*, Schum. – Occurs at Glanvilles Wootton on rushes growing in water in June.

149. *Amalopis immaculata*, Meig.—Common throughout the summer.

150. *A. littoralis*, Meig.—Common in watery places in June and July.

151. *Pedicia rivosa*, Linn.—This is a widely distributed species, occurring as far north as the Shetlands, from June to August. It is not a common species in Dorsetshire.

152. *Cylindrotoma distinctissima*, Meig.—There are two broods of this species, the one occurring in May, the other in August and September. It occurs at Glanvilles Wootton in woods.

153. *C. glabrata*, Meig.—Rare. Taken at Glanvilles Wootton by my father on July 20th, 1863, and by myself on July, 1890. Baron Osten Sacken has founded a new genus=*Liogma* for its reception on account of the discal cell not being forked.

154. *Tipula gigantea*, Linn. Generally distributed. Very common in June, 1891.

155. *T. lutescens*, Fab. Common in woods at Glanvilles Wootton in August and September.

156. *T. ochracea*, Meig. Common in May.

157. *T. fuscipennis*, Meig. Common on Poole Heath in July.

158. *T. pabulina*, Meig. Common in woods at Glanvilles Wootton in June.

159. *T. flavolineata*, Meig. Not a common species. Occurs at Glanvilles Wootton in June.

160. *T. pruniosa*, Hoff. Occurs in marsh situations at Glanvilles Wootton in June.

161. *T. vittata*, Meig. Occurs in woods at Glanvilles Wootton in April.

162. *T. lunata*, Linn. Common in marsh situations at Glanvilles Wootton in the beginning of June.

163. *T. longicornis*, Schum. Common at Glanvilles Wootton in July. The males of both this species and of *flavolineata* have long antennæ.

164. *T. varipennis*, Meig. Common at Glanvilles Wootton in May.

165. *T. vernalis*, Meig. A very common species in meadows in May.

166. *T. lateralis*, Meig. Common on rushes growing in water from June to August.

167. *T. luteipennis*, Meig. Occurs at Charmouth in October and the beginning of November. I have also found it at Hayle in Cornwall and at Tenby.

168. *T. oleracea*, Linn. Common in pastures in July and August.

169. *T. paludosa*, Meig. Very abundant in fields in September and October.

170. *T. scripta*, Meig. Occurs at Glanvilles Wootton in July.

171. *T. confusa*, Van. d. Wulf. Common in the woods at Glanvilles Wootton in September.

172. *T. hortulana*, Meig. Occurs at Glanvilles Wootton in May.

173. *T. plumbea*, Fab. I was surprised at meeting with this species on Poole Heath on April 11th, as I always considered it to be exclusively northern.

174. *T. pagana*, Meig. Common amongst rushes in the end of October and beginning of November. This is the last of the genus to appear in the year ; and *T. vittata* is the first, I have often found the short winged females sticking on the wall of my house.

175. *Nephrotoma dorsalis*, Fab. A very rare species and may easily be distinguished from the species of the following genus by the long antennæ of the male. Occurs only in part of a copse at Glanvilles Wootton at the end of July and beginning of August. The larva is probably a rotton wood feeder.

176. *Pachyrhina annulicornis*, Meig. Common at Glanvilles Wootton in the beginning of June.

177. *P. quadrifaria*, Meig. Common in June.

178. *P, cornicina*, Linn. Occurs at Glanvilles Wootton in copses in the end of July and beginning of August,

179. *P. maculosa*, Meig. A very common species in May and June.

180. *P. histrio*, Fab. Occurs at Glanvilles Wootton and on the Chesil Beach in July.

181. *P. imperialis*, Meig. Occurs at Glanvilles Wootton in August. An earlier brood sometimes occurs in May.

182. *Ctenophora bimaculata*, Linn. Rare. Has been taken at Glanvilles Wootton on May 31st, 1872, and July 7th, 1880.

183. *C. flaveolata*, Fab. Has been taken at Bloxworth by the Rev. O. P. Cambridge.

184. *C. pectinicornis*, Linn. Rare. Has occurred at Glanvilles Wootton on June 12th, 1867, May 22nd, 1871, and May 27th, 1874.

185. *Ptychoptera contaminata*, Linn.—Common from April to October.

186. *T. paludosa*, Meig. Common in June.

187. *P. albimana*, Fab. Common in June and July.

188. *P. lacustris*, Meig. Common in May and June.

189. *P. scutellaris*, Meig. Once taken at Sherborne by my father in October 6th, 1838.

(To be continued).

THE HYMENOPTERA - ACULEATA OF LANCASHIRE & CHESHIRE,

BY WILLOUGHBY GARDNER, F.R.G.S.

(Continued from page 183.)

The records for our district include:—

MEGACHILE, Latr.

- maritima, Kirb.—*lagopoda*, Thoms.—Cheshire coast, B.C.
- Willughbiella, Kirb.—Bowden, B.C.; near Birkenhead, J.T.G.; Chester, on flowers of sweet pea, E.C.T.; near Chester, R.N.
- circumcincta, Lep.—Southport, B.C.; Rock Ferry, J.T.G.; near Birkenhead, H.H.H.; Poolton, Hoylake, and Wallasey, W.G.; Chester, a colony behind garden steps in the city, R.N.
- centuncularis, Linn.—Fairly distributed in district, B.C.; noted in particular from Stretford and Dunham, near Manchester, J.R.H.; Rock Ferry, J.T.G.; and Chester, R.N.

ANTHIDIUM.

Our one British species forms cells in various suitable holes which it finds ready-made, such as the tunnels of *Cossus ligniperdi*, &c.; these the female lines with down collected from plants with woolly leaves, such as Lychnis.

ANTHIDIUM, Fab.

manicatum, Linn.—Bollin near Manchester, J.R.H.; Rainhill H.H.H.

STELIS, Panz.

The three species found in Great Britain are parasitical upon the genus *Osmia; S. phæoptera* and *S. atterimus* upon *O. fulviventris*, and *S. octomaculata* upon *O. leucomelana*. They have not yet been recorded in our district, though they have been taken just outside.

CHELOSTOMA.

The members of this genus are the true "Carpenter Bees"; they usually drill holes in wood, though they sometimes choose ready-made cavities, such as straws in a thatched roof; they line their tunnels with clay and sand.

CHELOSTOMA, Latr.

florisomne, Linn.—Rainhill, H.H.H. Frequently found, as name implies, asleep in flowers, or hanging therefrom, in state of somnolence, by the mandibles.

HERIADES, Spin-

This genus contains but one species, of habits similar to *Chelostoma*; it is rare, and has not been recorded in our district.

OSMIA.

The Bees of this genus are called "Mason Bees;" from the marvellous way in which they construct their cells of a cement formed of grains of sand, small stones, &c., agglutinated together by a secretion of the insect.

These cells are constructed in many different situation by the various species with an extraordinary power of adaptability to circumstances. *O. cœrulescens*, *rufa*, *bicolor*, and *aurulenta* frequently burrow in sandy banks, but as often, when such are not available, in decayed wood; *O. fulviventris* also selects the latter situation. *O. leucomelana* forms its nidus in dead bramble stalks, *O. xanthomelana* constructs its beautiful little pitcher-shaped cells in the roots of grass, and *O. parietina* clusters its cocoons under flat stones on mountain sides. Some species, such as *O. rufa*, *bicolor*, and *aurulenta*, in addition to the situations mentioned above, occasionally make use of almost any avaailable cavity which offers, frequently constructing their cells inside straws and reeds, or even in deserted snail shells. Several of the species form large colonies.

Osmia, Panz.

rufa, Linn.—Bowden, J.R.H.; Rainhill, H.H.H.; Cheshire coast, B.C.; Chester, E.C.T.; Oxton, W.G.

xanthomelana, Kirb.—*fusciformis*, Gerst, *nec* Sm.—This rare species was taken in abundance near Liverpool by Mr. G. Waterhouse in 1835. It builds beutifully constructed pitcher-shaped cells of mud and grit at the roots of tufts of grass; the imago frequents around ivy, and appears in May. *v.* "Zoologist," Vol. II.

cœrulescens, Linn.—*ænea*, Sm.—Cheshire coast, B.C.; Rock Ferry, J.T.G.; near Chester, R.N.; Upton, near Chester, males about wall of old barn, E.C.T.

fulviventris, Panz.—Has been taken at Crosby, H.H.H.; and Rock Ferry, J.T.G.

aurulenta, Panz.—Occurs at Wallasey, breeding in snail shells, H.H.H.

CERATINA, Latr.

Our one small British species excavates its burrow in dead bramble stalks. It is rare, and has not been noted in this district.

EUCERA, Scop.

The single species of this genus, *E. longicornis* (after the long antennæ of the male), burrows about 8 inches deep in the ground, and usually forms large colonies where it occurs. It has, apparently, not been observed in this district.

ANTHOPHORA.

A genus containing four species, three of which, *A. retusa*, *pilipes*, and *quadrimaculata*, burrow in hard banks, and the fourth, *A. retusa*, in decayed wood; the two first-named are gregarious.

Anthophora, Latr.

retusa, Linn.—*Haworhthiana*, Kirb.—Taken at Hazelgrove, B.C.

pilipes, Fab.—*acervorum*, Sm.—*retusa*, Kirb.—Fairly distributed. Sale, Bowden, and Stockport, J.R.H.; Patrick Well, Rainhill, H.H.H.; Tranmere near Birkenhead, J.T.G.; abundant, locally at Bromborough R.N.; Bache, Eaton and Broughton Halls, near Chester, E.C.T.; Hoylake and Meols, W.G.

furcata, Panz.—One specimen in garden near Chester, E.C.T.; and one at Hooton, Cheshire, R.N.

SAROPODA, Latr.

The quick flying and shrill sounding *S. bimaculata* is the only

British species; it forms large colonies in banks and sandy cliffs; it has not been recorded in our neighbourhood.

Leaving the "solitary" genera, we now come to the "social" bees, which live in communities, comprising male, female and neuter.

BOMBUS.

This genus embraces the well-known Humble Bees. They construct nests of moss, grass, &c., in which large numbers live; some species, such as *B. terrestris*, *lapidarius* and *hortorum* make use of ready-made cavities under ground; others, as *B. muscorum*, *cognatus*, *Sylvarum* and *pratorum* build elaborate nests above the surface.

BOMBUS, Latr.

cognatus, Steph.—*senilis*, Sm.—*venustus*, Sm.—Warrington B.C.; Higher Bebington, J.T.G.; on Hyacinth at Hooton, R.N.; and at Baruston, W.G.

muscorum, Linn.—*agrorum*, Schmied, Thoms.—Very common and generally distributed.

Latreillellus, Kirb.—*subterraneus*, Thoms.—Mersey Banks at Stretford, J.R.H.

var. distinguendus, Mor.—*elegans*, Sm., *nec* Seidl.—*fragrans*, Auct., *nec* Pall.—Reported from Lindow and Chat Moss near Manchester, J.R.H.

hortorum, Linn.—Common and generally distributed.

var. subterraneus, Auct., *nec* Thoms.—Frequent, B.C., R.N.

var. Harrisellus, Kirb.—Two specimens of this black variety. Taken at West Kirby, J.T.G.; and one at Chester, E.C.T.

pratorum, Linn.—Abundant; partial to Campanula and Rhododendron, E.C.T.

lapponicus, Fab.—Taken on high moors near Marsden, also at Staly Bridge, B.C.; Chat Moss, J.R.H.

sylvarum, Linn.—Common nearly all over our district.

Derhamellus, Kirb.—*Rajellus*, Kirb., Thoms.—Eaton Hall, near Chester, on purple lutestripe, E.C.T.; not uncommon in neighbourhood of Chester, R.N.; Heswall on heather, W.G.

lapidarius, Linn.—Abundant everywhere. "Males specially partial to purple iris, females to lavender, and neuters to clover. Workers of *Vespa vulgaris* observed to enter nest at Bache Hall," E.C.T.

terrestris, Linn.—*lucorum*, Sm.—*virginalis*, Kirb.—Common everywhere.

(To be continued).

THE SECONDARY SEXUAL CHARACTERS OF THE BRITISH COLEOPTERA.

BY JOHN W. ELLIS, M.B. (VIC.), F.E.S.

(*Continued from page* 188.)

The sexual characters presented by the legs of the Coleoptera are so numerous and so very various that they are very difficult to classify. Perhaps the best order will be to consider the modifications *(a)* of the coxæ and trochanters, *(b)* of the femora and tibiæ, and *(c)* of the tarsi. But we may first notice the much longer front legs of the males of *Lucanus cervus*, *Erirhinus vorax*, and the species of the longicorn genus *Monochammus;* the much stouter anterior and intermediate legs of the male *Hyphidrus oratus*; and the longer and more slender legs of the male *Ptinus fur*. The little genus *Bryaxis* presents some curious sexual modifications of the anterior trochanters; thus the male *B. fossulata* has them triangularly toothed; that of *B. helferi* has them furnished with a long curved spine; that of *B. juncorum* has them shortly spined while the middle trochanters have each a long spine; while the same sex of *B. impressa* has the trochanters simple but the anterior coxæ are spined. The posterior trochanters of the male *Sphodrus* are long and projecting; those of the rare *Emus hirtus* have a long curved hook in the male; the same sex of *Pristonychus* has the hind trochanters prolonged in a sort of spike; those of *Choleva angustata* and *cisteloides* are sharp and pointed, of *C. intermedia* long and shaped like a gouge, and those of *C. agilis* with a distinct curved tooth. Very frequently among the Rhynchophora or "weevils" the anterior and sometimes all the femora are furnished with a more or less distinct tooth on the lower margin, and when present in both sexes it is usually much less developed in the females (but some *Ceuthorrhynchi* have the posterior femora toothed *only* in the female). In some species, as in some members of the genus *Cionus*, the males have all the femora toothed while those of the female are simple and while the male of *Gymnetron collinus* has a tooth on all the thighs, those of the front legs of the female are toothless. The femora, especially the two hinder pairs, of the male *Cryptorhynchus* are distinctly two-toothed, while those of the female have only one tooth. The males of the genus *Scydmænus* generally have the anterior femora clubbed at the extremity while the front tibiæ of the males of *Scydmænus scutellaris* and *S. pusillus* are triangularly dilated at the distal end. Such is also the case in the males of the tiny *Trichopteryx brevipennis* and *T. kirbyii*, and in the males of some species of *Cryptophagus*. The males of some species of *Monotoma (picipes*, *longicollis)*; of *Lathridius lardarius*, *angulatus*, *constictus* and *transversus;* of several species of the genus *Corticaria (denticulata, serrata, fulva, elongata, gibbosa,* &c.); of *Crioceris asparagi;* of *Prasocuris aucta, marginella,* and *hannoveranna;* of both British species of *Tenebrio,* and of many of the weevil group have the anterior tibiæ bent or curved while in the females they are straight. In *Bythinus curtisii, Bryaxis sanguinea,* and *Tychius meliloti,* the anterior tibiæ of the males have a more or less sharp tooth in the middle. A curious exception to the general rule occurs in the genus *Rhizotrogus,* in the *females* of which the anterior tibiæ are furnished with three teeth on the outer edge, while those of the male are quite plain. The males of the genus *Geotrupes* have a distinct ridge or keel on the anterior tibia which terminates in one or two teeth at the extremity, and the free margin of this keel is either plain as in *stercorarius,* toothed as in *spiniger,* or serrate as in *mutator, sylvaticus* and *vernalis.* In most insects the anterior tibia ends in one or two spines or hooks; in many "weevils" these are present only in the male, and in the males of a few species of *Aphodius (quadrimaculatus, merdarius, prodromus, contaminatus, luridus* and *depressus)* these are stouter, curiously bent or twisted and cut off very bluntly at the extremity, while in the female they are slender and sharp pointed. Singularly enough, while the males of the genera *Attelabus* and *Apoderus* have the anterior tibiæ terminated by a single hook, the females have two hooks at the apex of these limbs. The male of *Bruchus loti* has a bifid tubercle at the apex of the intermediate femora; its ally *B. atomarius* has a small tooth before the apex of the intermediate tibiæ; while the male *Claviger foreolatus* has both the femora and tibiæ of the middle legs toothed. The males of *Amara spinipes, convexiuscula* and *alpina* have a few small teeth on the inner side of the middle tibiæ, which are absent in the female; while the males of many of the same genus have these limbs curved, as is also the case in the same sex of *Choleva agilis,* of *Corticaria crenulata, denticulata, elongata,* and *fenestralis.* Again, in almost one half of the species of the genus *Epuræa* the middle tibiæ of the male is wavy on the inner side or strongly widened at the extremity, while *E. pusilla* has all the tibiæ curved in this sex. In the male *Limnebius truncatellus* the middle tibiæ are arched and the hinder ones very much widened and flattened in their distal two-thirds. The males of the Rhynchophorus genera, *Amalus* and *Phytobius,* have the intermediate tibiæ hooked at the apex. It is in the hinder legs that we find the greatest variety of sexual modifications, and two genera, *Anisotoma* among the Clavicornia, and *Donacia* among the Phytophaga, especially illustrate the diversity of sexual armature. In *Anisotoma cinnamomea, dubia, ovalis, brunnea, calcarata,* &c., the hind legs—especially the femora—of the male are very much elongated; in *A. calcarata* the posterior thighs of the male end, each, in a large triangular tooth; in the same sex of *cinnamomea*, *oblonga*, and *dubia* the hind thighs each end in two teeth, one on each side of the point of attachment of the tibiæ; the intermediate tibiæ of the male *cinnamomea* are distinctly curved, while those of *lunicollis* are widened at the apex; and the hinder tibiæ are curved in *cinnamomea*, *oblonga*, *dubia*, *ovalis*, *brunnea*, *punctulata*, and *calcarata*. In the females of all the species the tibiæ are straight and the femora never toothed– as is also the case in the male of a single species, *parvula*. In the genus *Donacia* the hind femora of the male are often furnished with two large triangular teeth, while those of the female have two slightly smaller *(crassipes*, *bidens)* or one large and one very indistinct tooth *(dentata*, *sparganii)*; some males have only a single large tooth while the female has either none or one very slightly developed *(lemnæ*, *sagittariæ*, *nigra*, *affinis)*; while *D. crassipes*, *bidens*, and *dentata* also have the hinder tibiæ of the male with a number of fine rounded teeth on the inner side. The following (among other) species have the hind femora toothed in the male: *Colenis dentipes* (with two teeth, one blunt and one sharp), *Cyrtusa minuta*, *Agaricophagus cephalotes*, *Hydnobius punctatissimus* (both strongly hooked), *H. punctatus* (tooth spiniform), *H. strigosus* (tooth broad and triangular), *Choleva angustata* and *C. sturmii*, *Agathidium nigripenne*, *A. atrum*, *A. seminulum*, *Liodes orbicularis*, all the species of *Colon* except *C. latum*, and *Epuræa decemguttata* (which also has the hinder tibiæ excised at the apex). The males of some species have the hinder thighs much thickened; such as: *Stenus Juno* (which also has the hinder tibiæ widened and curved), *Megarthrus denticollis* in which also the intermediate tibiæ are curved, *Telmatophilus caricis*, *Rhynchites betulæ*, *Necrodes littoralis* (in which the thickening is sometimes enormous and which also has the hinder tibiæ curved), *Osphya bipunctata*, *Oneomera femorata* (in which the hinder tibiæ are strongly bent) and, most remarkable example of all, *Œdemera nobilis*, in which the hind thighs project from the sides like huge knobs. In the males of the British species of *Clytus* the hinder thighs are much elongated, and the same sex of *Callidium alni* has the hind thighs greatly curved. The males of several species have the posterior tibiæ curved; instances being *Silpha quadripunctata*, *Cryptophagus populi*, *Phratora vulgatissima*, *Thyamis lurida* and *nasturtii*, and *Strangalia armata*, in which species the curved portion is finely crenulate, with a tooth at each end. A tooth is present on the posterior tibiæ of the male *Stenus ater*; and the male *Malthinus fasciatus* has a tubercle behind the middle of the same limb. The males of *Hydræna gracilis* in addition to having *all* the femora thickened have the hinder tibiæ ciliated on the inner side, while the same sex of *H. pygmæa* has the posterior tibiæ thickened from the middle to the base. *Megarthrus depressus* and *sinuatocollis* have the hinder tibiæ thickened in the male, while the latter species also has the intermediate and the posterior tibiæ curved. The male *Coninomus nodifer* has the hind tibiæ widened and notched just before the apex, and this sex of *Anthicus instabilis* has the same limbs much widened towards the extremity. The male of *Heliopathes gibbus* has the middle and posterior tibiæ and the base of the hinder femora fringed with long tawny hairs, which are absent in the female. The males of some genera of weevils (*Cœliodes*, *Centhorrhynchus*, &c.) have the posterior tibiæ furnished with a hook at the apex.

(*To be continued*).

Mollusca.—Notes.

NOTES ON VARIETIES.

(*Continued from page 155.*)

Overcrowding, or too limited a supply of water, has an injurious effect on *Limnaea stagnalis* as well as on *Homo sapiens*. Semper shows that these conditions, even when food is supplied in abundance, produce dwarfed individuals, and such dwarfing cannot be compensated afterwards by any especially favourable conditions or treatment, as the shell is constructed on a more diminutive scale.

Too Abundant Vegetation in water is considered conducive to the formation of scalariform varieties of the genus *Planorbis*, "which are often found in those bodies of water choked up with vegetation, and according to Herr Clessin, also on the margins of lakes amongst large stones.. M. Van den Broeck considers this spiral form as a modification consequent upon, and adaptive to the special peculiar features of their environment, as he conclusively proved by experiment that these spirally coiled shells make their way more readily through the dense vegetation than those of normal shape which traverse the thick masses of duckweed, &c., with great labour and difficulty."

Unhealthy and Unnatural Conditions are also noted as productive of distortions which are occasionally spiral, found in warm water reservoirs, and in streams of water pumped from coal pits. Mr. Taylor quotes a case in which nine-tenths of the *L. peregra* found one season in a pool near Geneva had a curious malformation at the base of the columella, which was coincident with an extraordinary abundance of *Hydra viridis* in the pond. On the following year the *Hydra* disappeared and the malformation ceased.

Flowing and Stagnant Water.—Mr. S. C. Cockerell writing of *Limnæa* has remarked that running water tends to foster a light and slender form of shell, and stagnant water a stronger and more expanded one. Mr. Taylor expresses a similar opinion, instancing *L. burnetti* as an expanded form of *L. peregra* inhabiting still water, "while the opposite condition, comparative increase in length and decrease in breadth . . . as exemplified by the varieties *microstoma*, *elongata*, &c., is said to be generally found in flowing waters." It is added, however, that many exceptions to this rule prove that other unascertained causes exercise great influence in modifying the contour of shells. This rule, as regards substance of shell, does not hold good for *Anodon*, which in larger and almost stagnant sheets of water attains its greatest size with a light shell, the smaller and more heavy varieties being usually found in rivers. This is what might be expected, the greater thickness and strength of the shell being necessary to withstand the force of the current when increased by rainy seasons.

STRONG CURRENTS.—Mr. J. B. Bridgman is of opinion that the peculiar breadth of the var. *compressa* of *U. pictorum* is caused by the wash of strong currents, "the current washing away the softer particles of mud, and the shell having harder work to keep itself partially buried in the bottom causes the unusual expansion." The Rev. W. C. Hey attributes the presence of small and malformed specimens of *U. tumidus* to the effect of water rushing over a dam, and he adds, "rapidly running water is always deleterious to the development of such shells as generally effect still waters." Mr. Taylor says, writing of *L. peregra*, "The strong-shelled forms appear from published observations to inhabit the margins of turbulent streams or rivers, and the shores of large bodies of water, where the wave commotion necessitates a robust shell to withstand its force and violence, the varieties *lutea*, *fluminalis*, *solida*, &c., serving to typify this line of variation."

DEPTH OF WATER.—Mr. Taylor writes, "Deep water is said to have a similar effect [to the extremes of heat and cold] judging from Nilsson's description of *L. balthica* [a variety of *L. peregra*] which is said to live at a depth of 24 to 36 feet in the brackish-water of the Baltic, and Mr. W. Thompson, the able Irish naturalist, ascribed the peculiar delicacy of the specimens of the var. *lacustris* [of *L. peregra*] from Lough Neagh, to the circumstance that they habitually lived in the still depths of the lake."

FOOD doubtless has a very large share in determining the size of all species of Molluscs, but to produce a large size other favourable conditions, suited to the species are required. Mr. E. H. Rowe read a paper before the Lambeth Field Club some years ago, in which he mentioned taking some extremely fine examples of *Succinea putris*, giants among the *Succineæ*, *Cochlicopa* in the same situation was also of large size and beautiful lustre. Examining the other parts of the

Thames bank, and also that on the opposite side, the shells were found plentiful, but of much smaller size, the vegetation was everywhere abundant, and supply the general conditions favourable to the species, but in the first locality "there was alluvium, more sand, and no mud. The water was at times as fierce in activity, yet occasionally more still; the vegetation was much bolder, and more generously developed. There was more shade, more shelter, and more humidity and there were bordering grass lands which drained into the watercourse. The logical deduction is that even slightly altered conditions can produce decided differences in animals." The Rev. W. C. Hey, previously quoted, writes, "near Clifton Slope occur some very thin, but bright and clean, Anodontas, only small in size. They are clean, doubtless because of the absence of drainage, and they are small and thin because, not only is drainage absent, which often affords rich food, but the river is very clear of vegetable matter." As regards the possible influence of different foods in affecting the colour of shells, Mr. Charles Ashford writes, respecting *H. virgata*. "Another variety of a uniform purple-brown colour, sometimes wholly black, seems to be chiefly confined to a few square yards near the sea-cliff. The prevailing plant there is *Carduus tenuifolius*, upon the stems and leaves of which it is to be found associated with the typical forms." Writing on the mollusca of Herefordshire, Mr. A. E. Boycott states that he found the var. *albida* of *H. hortensis*, the var. *alba* of *H. rufescens*, and a light variety of *Succinea putris* "near to *S. virescens*" all on horse raddish.—W. A. Gain.

ERRATA in "List of Slugs" for September.—Page 177, line 16, for v. *rufus*, Fér,, read v. *ruber*, Moq. Page 178, v. *f.*, of *A. empiricorum* should read *ruber*, Moq.

GOSSIPING NOTES ON BRITISH COLEOPTERA.

BY G. A. LEWCOCK.

(Continued from page 84.)

CYMINDIS, Latreill.—Greek for "night hawk." The genus was formerly called *Tarus* (Clairv.) But two species occur in Britain, both of which may be considered local, and not common.

C. axillaris, F. (*angularis*, Steph.)—The upper surface of this species is shining; the elytra with humeral patch and margins yellow. It occurs at Box Hill and several other localities in Surrey; recorded by Mr. C. W. Dale from Portland. Canon Fowler adds Isle of Wight, New Forest, Lewes, Swanage, Portsmouth, Weymouth, Lowestoff, Swansea.

C. vaporariorum, L.—Upper surface, dull; elytra red brown at base. The species occurs chiefly in northern localities, but Mr. West informs me that he has taken it at Deal. Mr. W. E. Sharp "takes the insect at Heswell, an elevated and heathery situation on the shore of the Dee. It is found under stones, either in late autumn or early spring. I have never seen more than one specimen under a single stone. It also occurs at Llangollen, but sparingly." Also taken by Mr. Wilding at Heswell and Bidston, under stones in spring and autumn. Dr. Ellis (*Coleoptera of Liverpool*) records the capture of two specimens on Oxton Common in October, 1885. The species also occurs in many parts of Scotland, and is recorded from Donegal, Ireland, but on whose authority it appears to be doubtful.

Masoreus, Dejean.—But one species occurs in Britain, namely *M. Wetterhalii*, Gyll.; it is found in sandy places, and is not uncommon at Deal, "by grubbing at roots of grass" (Newbery, West, A. E. Hall); recorded on Chesil Bank (C. W. Dale). "Two specimens of this interesting little beetle were captured early in the spring of 1889 at roots of grass on the Cumber sandhills" (W. H. Bennett, Hastings). Not recorded from either Ireland or Scotland.

Loricera, Latr.—The single species *L. pilicornis*, F., which occurs in the British Isles is generally common and widely distributed. The specific name is the Latin equivalent for the (Greek) generic term, and refers to the setose antennæ.

Panagæus, Latr.—The Greek origin means "very holy," alluding, apparently to the cruciform marking on the elytra. Two species occur with us, *P. crux-major* and *crux-minor*. The former has the thorax more transverse, and in the latter the thorax is almost circular.

P. crux-major, *L.*—Occurs in marshy places; has been recorded from Shooter's Hill (Kent), and Oldham and Norwood (Surrey), probably in mistake for the next species (G. C. Champion, Kent and Surrey Coleoptera). Boxhill, under turf (West).

P. quadripustulatus, St.—On chalky hillsides and sandy places, under stones, moss, &c.; not common; Cuxton, Deal, Down (Kent); Caterham, Coombe Wood, Sanderstead, Mickleham (Surrey). (G. C. Champion, Kent and Surrey Coleoptera. In rabbit hole, Deal, 1890 (Heasler). Under moss on cliffs at Dover, also taken at Deal (G. C. Hall). Does not occur in Scotland. The specimens in Dublin Museum are from the South of England (H. G. Cuthbert).

Coleoptera at Mitcham.—Since writing the last notes on locality I have continued my visits to the common, meeting with equal, if not greater success than ever. In December I took, by trowelling in the banks of ponds and ditches, *Notiophilus 4-punctatus*, *Amara bifrons*, *Mycetoporus clavicornis*, *Quedius maurorufus*, and also a specimen of

Cleonus sulcirostris which completely deceived me at the time, as, besides, being in rather an unusual locality, the insect itself was such a dark one that I imagined it to be *C. nebulosus*. On the same day, out of a clump of grass I took the following: *2 Choleva angustata*, *4 Lathrobium longulum*, *6 Simplocaria semistriata*, *3 Oxypoda longiuscula*, *3 Homalota pygmæa*, and several *Myllæna elongata*. To finish up the day I found some putrid fungus which yielded *Homalota occulta*, var. *fungivora*, and *2 H. triangulum*. This day's success induced me to go again on the following Saturday, but the weather was cold and windy and it rained nearly the whole time; the result may be imagined. During the short time I was there I secured *Philonthus micans* and *P. signaticornis*; also one of the best insects that the locality is likely to produce, namely: *Homalota splendens*. In April I made a special excursion after *Berosus signaticollis*, but only took a single specimen. The deficiency in this respect, however, was made up by a series of *Cnemidotus impressus* and a single specimen of *Haliplus cinereus*; whilst among the commoner water beetles may be mentioned *Dytiscus punctulatus*, *Colymbetes pulverosus*, *Hydroporus erythrocephalus* and *H. picipes*. Visiting the same locality in May, I took *Anacæna bipustulatus*, *Limnebius papposus*, *Anchomenus viduus*, and *Chlænius nigricornis*; but the best capture was a specimen of *Homalota debilis*. My visit in June produced *3 Stenolophus teutonus*, *2 Polydrosus confluens*, *1 Trechus discus*, and *1 Hydroporhus ferrugineus*, all of which, especially the last two, were very acceptable. The past month (September) has yielded *7 Halipus cinereus*, *Tachyusa atra*, and another *Homalota splendens*.—H. HEASLER, Peckham.

Reports of Societies.

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

September 1st, 1892.—Exhibits:—Mr. Jackson, a fine var. of *Papilio machaon*, in which the two black blotches on the costa had coalesced; also a var. of *Polyommatus phlæas*, without the copper band on the posterior wings, and a gynandromorphous specimen of *Trichiura cratægi*. Mr. Gates, a number of species taken this season near Hammersmith, including *P. salicana*, *P. neglectana*, *P. bilunana*, *D. olivella*, *C. laburnella*, *P. trigonodactylus*, *C. cygnipennella*, *S. internana*, *G. hermanella*, *G. velocella*, *P. cruciferarum*, and one specimen of *S. triquetella*. Mr. Bacot, a series of *Bombyx neustria* bred from larvæ from South Devon and Hadleigh. This series included a var. of the ♀, in which the central band was resolved into a triangular mark on the costa and the inner margin. Mr. Smith, two living larvæ of *Acronycta tridens*, and examples of *Zygæna trifolii* and *Gnophos obscurata* from Swanage. Dr. Sequeira, *Colias edusa*, *Eupithecia subfulvata*, and a pair of *Leucania lithargyria*, the ♀ being set underside to shew a tuft of black hair situate behind the last pair of legs. Mr. Tutt considered this tuft as a secondary sexual character and thought that it might be connected with the scent glands. Mr. Sykes, *Colias hyale*, *C. edusa*, and var. ♀ *helice* from Folkestone, and a specimen of *Polyommatus phlæas* with a very pale posterior wing. Mr. Clark, a very dark ♀ *Odonestis potatoria* and a fine specimen of *P. phlæas* without the characteristic copper colour. Mr. Tutt stated that he considered this, and the many similar varieties recorded from time to time, to be cases of the ill-development or absence of the pigment. Mr. Goldthwait, two vars. of *Spilosoma menthrastri* from Walthamstow, one closely approaching *S. urticæ*, also a series of *Colias edusa* from Folkestone. Mr. Riches, a long series of *Abraxas grossulariata* and living larvæ of *Dianthæcia capsincola* feeding on the seeds of "Sweet William." Mr. Poul, a large number of species from Tunbridge Wells, including *Coremia propugnata*, *Macaria liturata*, etc. Dr. Buckell, living larvæ of *Eupithecia centaureata* ten days old; also a series of *Acidalia immutata* from Leigh, Essex, and he read the following notes on this species: "This is an insect about which Newman appears to have known but little. Merrin states that it is found in fens and similar localities in June and July and sometimes again in September; he also adds that the larva hybernates, feeds on some marsh plant and will also eat knot grass *(Polygonum)*. Mr. Seymour St. John gives purple loosestrife, plantain, yarrow, valerian, and meadow-sweet as regular foods, and groundsel, dandelion, whitethorn and clematis as foodplants in confinement. The natural footplants appear to be quite as much hedgerow plants as fen plants. "The best time for the imago would appear to be about the second week in July. The examples shown were taken on July 15th, and on the 26th, they were *passè*. They rise out of the long grass as one walks along. Ova deposited last year on July 26th, hatched on August 12th. On the 30th, I noticed that the larvæ were growing very slowly, they rested on the stems and leaves of the chickweed curled up in the shape of a note of interrogation (?)—a similar attitude to that assumed by the larvæ of many Eupitheciæ, etc. Their colour was a dingy green without any characteristic markings. The larvæ were exhibited before this Society on October 1st, and on the 4th, I noticed that some appeared full grown whilst others remained quite small: some of the larger ones began to make earthen cocoons on October 10th, and the first pupated on the 17th, of the month. The moths however failed to put in an appearance. The insect seems to be widely distributed but local. It does not figure in any of London lists, but is recorded from the neighbourhood of Swansea, Leigh, Romsey Hertford and Warrington. Mr. Tutt, also records it from Wicken Fen, Mr. Simes, from Matley Bog near Lyndhurst, and Mr. Fenn, from Deal". Mr. Tutt also read a paper on his recent work at Wicken Fen. In Coleoptera, Mr. Heasler exhibited two very local species from Mitcham—*Trechus discus* and *Hydroporus ferrugineus*; he stated that he took the example of the latter species with his hand and that he felt sure he could have procured more, had he had a water net.

September 15th, 1892.—Exhibits.—Lepidoptera: Dr. Buckell, larvæ of *Ephyra punctaria* 19 days old, *Liparis auriflua* without the black markings, *Nonagria despecta* from Wimbledon, and a dark form of *Amphipyra pyramidea* bred from a larva fouud in Kensington Gardens. Mr. Southey, series of *Hadena pisi* and *Cidaria dotata* from Hampstead, also a long series of *A. grossulariata* containing a specimen with a pale straw ground colour, and a finely speckled example. Mr. Bacot, examples of *Melitæa cinxia* from the Isle of Wight, and a series of *Thecla betulæ* bred from South Devon larvæ. Mr. Rosevear, two specimens of *Torrubia robertsii*, a parasitic fungus having for its host the larva of *Hepialus virescens*, from New Zealand; he also read some notes descriptive of the growth, &c., of the fungus. Dr. Sequeira, *Acronycta ligustri*, *alni*, and series of *Leucania turca* and *Aplecta herbida* from the New Forest. Mr. Allbuary, two very pale examples of *Vanessa urticæ* from Northfleet, the pale colour being evidently produced by failure of the pigment. Mr. Clark, a very fine series of *Liparis monacha*, bred from a pair received alive from Scarborough. The female was very much suffused, and the male nearly black and the progeny followed their parents.

the males in many cases being jet black, but all the females shewing a considerable white area. Mr. Clark, also read a paper on "A Melanic Race of *Liparis monacha*." Coleoptera: Mr. Heasler, series of *Elater balteatus, Melandrys caraboides, Anaspis thoracica, Ceuthorhynchus asperifolium*.—A. U. Battley, and J. A. Simes, *Hon. Secs.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.

September 12th.—The President (Mr. S. J. Capper, F.L.S., F.E.S.) in the chair. Mr. F. N. Pierce, F.E.S. read a paper entitled, "Some further researches upon the genital structure of Lepidoptera." The author described the different species in the genera *Acronycta, Agrotis, Noctua*, &c., and showed that in cases where the identity or otherwise of species was disputed the genitalia might often be used as a sure means of differentiation. The paper was illustrated by the author's preparations of these parts thrown upon a screen by the aid of Oxy-hydrogen Micro-Lantern, and by photographs and specimens of each species described. The President exhibited varieties of *Angerona prunaria*. Messrs. Gregson and Robson, challenge series of *Abraxas grossulariata*. Mr. Scowcroft, varieties of *Xanthia cerago*; Mr. William Johnson, a fine variety of *Vanessa urticæ*, which had the ground colour very pale, *Bombyx rubi* with the bands absent and *Orgyia fascelina* with a mass of dark scales near the centre of the costa of the forewings; Mr. Prince, varieties of *Abraxas grossulariata* and a specimen of *Colias edusa* nearly the variety *helice*, captured at Wallasey. Mr. Harker *C. edusa* from Crosby. Mr. Crabtree, a long series of *C. edusa* captured at Sidmouth South Devon, who remarked that he had only taken one var, *helice* among 56 types. F. N. Pierce, *Hon. Sec.*,

(No other report had reached us up to the time of going to press).

General Notes.

Micro-larvæ for the Month.—October has arrived, and now is the time to enjoy the autumnal beauty of the woods and country lanes. The hedgebanks are still gay with many wild flowers, but a change may soon come, so we must endeavour to collect all those larvæ that are now to be taken feeding on the leaves as soon as possible, for towards the end of the month we occasionally get slight frosts and boisterous winds that soon cause the leaves to be scattered, and the larva also, we then lose our chance of obtaining them during the present season. In the seed heads of golden rod *(Solidago virgaurea)* the larvæ of *C. æmulana* may now be taken, and in the seed heads of *Centauria*, the larvæ of *C. stramineana*, the *Inula conyza* generally found growing on dry chalky banks have the seed heads tenanted at this time by the larvæ of *G. bifractella*, and in the stems of *Chenopodium* the larvæ of *G. obsolitella* are now feeding, and the leaves are being mined by the larvæ of *G. næviferella*, which has a whitish mine, and by the larva of *Gel. hermanella* whose mine is a greenish colour, both of which are often feeding on the same plant. The heads of the wild marjoram must now be taken, for they contain the larvæ of *G. subocellea* which are among the seeds, in their Coleophora-like cases. The fruit of the alder should now be examined for the larvæ of *S. pedella*, which are betrayed by the little heaps of frass sticking out between the scales, and the discoloured hips of the wild rose. if we want a series of *S. roseticolana*. The heads of the Carline thistle, which grows generally on chalky slopes, should now be taken, for many of them contain the larvæ of *P. carlinella*. *P. lapella* is now feeding in the seed heads of burdock. There are two species of *Ornix* to be taken this month, viz.: *O. avellanella* on nut, and *O. betulævorella* on birch; these larvæ are leaf miners when young, afterwards turning down the edge of the leaf and eating away the surface. On oaks we notice some of the leaves have large whitish blotches on them, this is caused by the larvæ of *T. complanella*, and the serpentine galleries of the larvæ of *Nep. atricapitella* and *Nep. subbimaculella* we cannot help noticing. This is the month for the seed-feeding Coleophora, all of which must be kept in the open air when put into the cages; on seeds of *Atriplex* and *Chenopodium* the cases of C. *annulatella* may now be seen, and on the seeds of *Achillea millefolium* those of *Col. argentula; Col. virgaurella* on seeds of golden rod, *C. salinella* on *Atriplex portulacoides*, growing on salt marshes, and *C. mæmacella* on the same plant and *Suida maritima*. The flower heads of the sea lavender should now be gathered, for many of them contain the larva of *G. brizella*, also the larva of *Col. limoniella (Goniodoma auroguttella)*; these larvæ eat out the contents of one of the seeds which it then uses as its case, and when full-grown it crawls down the stem half way and bores it way inside, hollowing out sufficient space to pupate in, the small hole is then webbed over and the cases drop off. The larva of many species of the *Lithocolletis* are to be taken this month, they are easily seen by their characteristic mines in the leaves of the various trees; and many other species of *Nepticala* than those mentioned above, so that altogether this may be taken as one of the busiest months.—Geo. Elisha, Shepherdess Walk, N.

Cynthia Cardui and Atalanta.—The larvæ of these species have been unusually plentiful in the Warrington district. My father and I have secured a good number of both.—J. Collins, Warrington.

Lithosia sericea.—*Lithosia sericea* is out in our locality but it is very scarce. One or two per night are all I can get hold of.—Id.

Aplecta nebulosa var. Robsoni.—I have just finished breeding my *Nebulosa*, and I have only got a single pair of var. *Robsoni*. My friends have done slightly better, for they got half a dozen between them.—Id.

Colias edusa.—On the 8th of September I saw an example of the clouded yellow butterfly, *Colias edusa*, the first I have seen alive since 1877. I have seen records of its appearance in other parts this year. Is there any explanation for these re-appearances after such long intervals? —W. A. Gain, Tuxford.

[The explanation I have offered for some years, and which now seems to be generally accepted, is that the appearance of the butterfly in our country is owing to immigration. The spring brood migrates and an autumn brood abounds, but few seem able to bear our winter, and the number appearing in spring will be very small and unless next year give a favourable season it will disappear again.—J.E.R.]

SPIDERS OF A HOLLY HEDGE.

BY REV. FREDK. O. PICKARD-CAMBRIDGE.

Those who read this little paper must not jump to the conclusion that the spider population of a holly hedge differs essentially in kind or character from that of any other sort of hedge. It has merely happened that by a concurrence of advantageous circumstances the particular hedge in question, which has furnished material for the following notes, is unusually rich in examples of spiders and spider-webs. Situated as it is on the brow of the steep northern bank of the Eden, known as the "Scar," close to the city of Carlisle, its southern aspect fairly sheltered from northern and eastern inclemencies, it seems to present special advantages for the construction of those delicate fly and moth nets which we term cobwebs.

My attention was first attracted to the locality and the webs towards dusk on one of those lovely September evenings such as Eden valley can produce to perfection when in the mood. The tall, weird chimney stacks, looming through the uncertain mists, stood erect like ghostly sentinels in the southern distance beyond the river; while the hectic flush from the dying sun, as she sank into her western tomb, shed a delicate rosiness over the landscape. Upon my holly hedge were stretched numbers of beautiful and perfect orb-webs, the owners hanging behind each, beneath the central platform. Now and again, when the vibrating air and tell-tale threads heralded the approach of some winged presence, they would clutch convulsively, with nervous tarsal claws, the divergent spokes of that treacherous wheel whereon many a poor moth and gnat were destined to be broken. Othersome were not so wrapped in thoughts of daily food but that their spider instincts would readily and lightly turn to love, for upon many of the webs the small, dark, handsome male might be observed feeling his cautious way into female favour, essaying to bridge, with sly and nervous footsteps along the slender lines, the gulf between him and the somewhat irritable object of his affections.

It was indeed a pleasing sight for a naturalist, such numbers—I have counted more than sixty of an evening—of specimens of a very rare and, to me, quite new form of *Epeira* hanging expectant in their snares; the snow-white crescents beneath the body gleaming clearly in the dusky twilight. The web itself, a very perfect and beautiful structure, is typical of the *Epeiridæ*, and consists of a number of lines radiating from a common centre, where they are connected by a closely meshed "hub" or platform.

A fine thread spun round at a little distance from the centre and thence onwards to the circumference in a spiral form is called the "scaffold line." It serves as a guide in laying down the sticky spiral-line proper, and is snipped off, rolled up and swallowed, as the spider proceeds in the work. This latter line, so familiar to all observers, strung as it is with viscid globules, is attached to each of the radii with the assistance of the hind tarsal claws and spinners. From the centre to a distant nook amongst the holly leaves, sometimes direct, often on a system of branching lines, is stretched a stouter line, the "trap-line," leading to the spider's place of concealment, a white silken domicile spun within a conveniently curved holly leaf in the far recesses of the hedge. Within this retreat, safely ensconced, lurks the spider during the day, not easily discovered, but at night-fall or in early morning to be readily observed in the centre on the look out for prey. Often, it is true, she does a little fishing from her parlour door, when the trap-line held in her fore-finger indicates the smallest agitation of her net.

The name of the spider which has thus furnished so many opportunities for observation is *Epeira patagiata*, C.L.K., a species hitherto recorded from but a few localities. It belongs to the same family and genus as the "garden spider," with white cross on the abdomen, so familiar as the typical example of a spider given in most works on popular natural history. It is closely allied to, yet quite distinct from *E. cornuta*, Clk. (*E. apoclisa*, Blk.), a very common species throughout the country, often abounding along the river banks, where they construct their webs and nets amongst the fringing grass and rushes.

My kind editor will not, I fear, allow my pen the scope it would desire in order to put before my readers the many interesting facts concerning the *Epeiridæ;* but I must venture to risk his displeasure, and before passing on to other species and their ways, give a short account of an experiment which may be made with the wheel-web spinners.

Now it is well known that the larger species, *E. quadrata*, *diademata*, for instance, are by no means averse to a diet of bees and wasps if such can be secured without serious mishap. Take then a tuning fork to the heathy moors this month, when *quadrata* abounds, strike it and present it gently from various points towards the spider as she hangs in her web. She will start, exceedingly excited at the sound of, as she thinks, a real live hum, her forelegs will reach out towards the

4 OCT. 92
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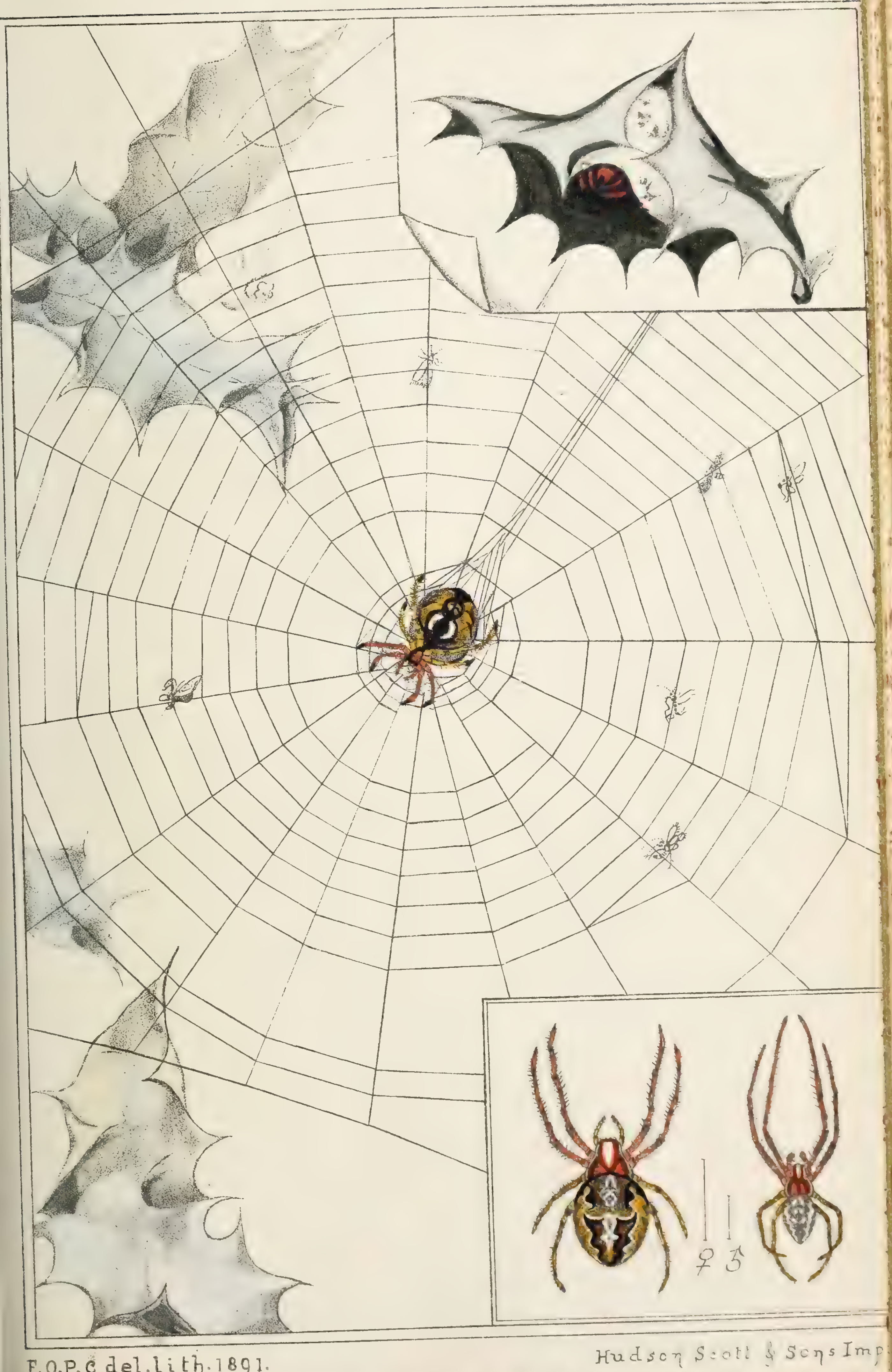
PLATE XII.



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Epeira patagiata. C.L.K.

BRITISH MUSEUM
NATURAL HISTORY

EXCHANGE.

DUPLICATES.—A. Cratægi, H. Sylvanus, Statices, Lonicerae, Senex, Griscola, Anachoreta, Apiciaria, Immutata, Laminata, Dealbata, Strigillaria, Sparsata, Pudorina, Despecta, Phragmitidis, Negricans, Umbrosa N. Rubi, Pastinum, Barbalis, Farinalis, Phragmitellus, Consociella, Chlorana, Dumetana, Conchana, Inopiana, Trigeminana, Scopoliana, Cruciana, E. Angustana, Misella, Pullella, Geoffrella, Albistria, Epilobiella, Crepusculella, etc.

DESIDERATA.—C. Album, Aataxærxes (undersides), Cassiope Betulæ, Meliloti, P. populi, Dolobraria, Miniata, Fuciformis, Fasciaria, Lunaria, Heperata, Sylvata, Cambricarina, Lunata, Salicata, Hexapterata, Firmata, Impluviata, Rubiginata (Scotch), Hastata, Rubidata, Psittacata, Miata, Russata, Immanata, Silaceata, Hamula, Lacertula, Dictaea, Dromedaius, Duplaris, Glandifera, Ligustri, Menyanthidis, Ripæ, Præcox, Cespitis, Gilvago, Aurago, Lutulenta, Nigra, Herbida, Carpophoga, Luctuosa, Crassalis. I. W. TUTT, Westcombe Hill, S.E.

EXCHANGE.—Duplicates: A. Blomeri, [illegible]. punctata, biundularia, E. satyrata, laricata, A. ulmata, Z. lonicerae, bred. Desiderata very numerous.—W. HEWETT, 12 Howard-street, York.

DUPLICATES.—Cinxia, Statices (Guernsey), Emutaria (few), Lunigera, Lucernea, Herbida, Hepatica, Brunnea, Triangulum, Lithoxylea, Pastinum, Anceps, Derasa, Conigera, Nebulosa, Duplaris (few), Viretata, Viridata (few), Russula ♂, Z. trifolii, Irrorella, Spilodactyla, Pupæ of Geminipuncta. Desiderata: Extersaria, Fuscula, Leporina, Xerampelina, Aurago, Menyanthidis, Dahlii, Lutulenta, Nigra, and offers.—ALBERT J. HODGES, 2 Highbury Place, London, N.

DUPLICATES.—Fine Lubricipeda var. Radiata and intermediate forms; accepted offers only replied to at this time of the season.—J. HARRISON, 7 Gawber-road, Barnsley.

EXCHANGE.—Desiderata: Sinapis, T. rubi, W. album, Pruni, Agestis (South of England), Ægon ♀, Iris, Polychloros, Adippe, Paphia, Epiphron, Ægeria, Megæra, Hyperanthus, Actæon, all the clearwings but Tipuliformis, Porcellus, Elpenor, Ligustri.—JOHN E. ROBSON, Hartlepool.

EXCHANGE.—Melanism and Melanochroism—I am working at this subject and will be obliged if any one who takes dark forms of Lepidoptera will communicate with me. I especially want information respecting those species that have assumed darker hues during recent years.—JOHN E. ROBSON, Hartlepool.

WANTED.—Collectors to look through their duplicates for old, chipped, crippled, deformed, damaged and utterly useless Male Lepidoptera with bodies; will pay postage or endeavour to make a return.—F. N. PIERCE, 143 Smithdown Lane, Liverpool.

EXCHANGE.—Duplicates: Jacobæa, Carpini, Haworthii, Silago, Zonaria, Pilosaria, and many others. Desiderata:—Elpenor, A. urticæ, Versicolora, Papilionaria, and offers.—J. W. BALDWIN, 472 Darwen Road, near Bolton, Lancashire.

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LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY, Free Library William Brown St. Liverpool. Next Meeting will be held on Monday, October 10th. Paper "Galls and Gall Insects," by S. L. MOSELEY, F.E.S.

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TO CORRESPONDENTS.

The Coloured Plate given with this part, in reference to the paper "The Spiders of a Holly Hedge," is part of the series in illustration of the "Hand-book of British Spiders." The description of it will appear there in due time, and the plate must be preserved to bind therewith.

The next to appear will be a portrait of the Rev. O. P. Cambridge, of Bloxworth. Other portraits are in rapid preparation.

Arrangements are now completed for continuing the Molluscan Section. W. A. Gain, Esq., of Tuxford, Newark, has kindly undertaken the Land and Fresh Water Mollusca, and Brocton Tomlin, Esq., of The Green, Llandaff, will attend to the Marine Section. Communications may be made to either of these gentlemen. All letters requiring a reply by post should contain stamp.

The Section for Coleoptera is conducted by G. A. Lewcock, Esq., 73, Oxford Road, Islington, to whom also direct communication may be made.

Mr. Lewcock also represents the Magazine in London, and will receiv subscriptions, papers and notes for publication, &c., &c.

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THE

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sound, ready to grapple with the supposed bee, no fear whatever will be exhibited, for she is a Merops apiaster amongst spiders *par exelence* and in her web can be seen many a poor bee trussed up in silken bands. So, too, will *patagiata* cautiously and enquiringly raise her forelegs in the direction of the hum and will show every sign of being in expectation of a welcome though albeit somewhat dangerous visitor. But let a spider of a smaller species be thus approached with that significant twang, and down she will drop like a bullet to the ground—for there *are* wasps which snatch small fat spiders out of webs, sting them gently and bear them to their nests for grubs to make merry over.

There are in addition to the above many other spider denizens to be discovered in and about my holly hedge, for it seems, the right of stretching nets for flies is confined to no privileged class but everyone sets his or her net just where he or she pleases, the webs being often in such proximity as to be interwoven the one with the other. The harmony, however, of this association is seldom broken, nor do the various occupants of different webs seem to interfere with each other. Should a neighbouring proprietor miss his footing and fall into a net set beneath—well—he will be at once trussed up and hung in the larder—but otherwise they live side by side on very friendly terms.

So numerous are the spiders and so closely are the webs set on the hedge that it seems very long odds against any moth or gnat, endeavouring to make its way out of the hedge or striving to enter, either making good its escape or succeeding in finding a place of rest during the day-time other than the fibrous and glutinous couch of some fat spider. Here, we may find in plenty the two *Zillas*—for I find that *x-notata*, Clk., though not so abundant, is nevertheless, here dwelling side by side with *atrica*, C.L.K.—*Tetragnatha extensa*, Linn., and *Meta segmentata*, Clk., with their beautiful orbicular webs stretched wherever *patagiata* has not already pre-occupied the air. The webs of the two former spiders may readily be recognised by the trap line which seems to consist, not of a separate, independent cord from the centre, but as though one of the radii had been thickened, diverted from its normal position and office and utilized for trapping purposes. For we shall see that a wedge-shaped section is usually (especially in the young spider's web) left without the intervening cross lines, giving rise to an empty space in the web, which can be considered as a vacant sector of the otherwise meshed circle.

This vacant sector is usually considered as distinctive of the webs of the genus *Zilla* and has been noted by most writers on the *Epeiridæ*. Often and often however webs of *Zilla* can be found with this same sector almost entirely filled in with the viscid spiral line—a fact which has also been noted by several authors. But I believe that the *ration-*

ale of such action on the part of the spinners has never before been observed. I therefore will give what I fancy may be the true key which would explain this curious variation in custom.

I have repeatedly watched *Zilla* constructing its web, and I have observed that the filling in, or leaving vacant, of the above-named sector depends very greatly upon the angle which the "free radius" or trap-line makes with the plane of the web. Now, in an ordinary way, when *Zilla*, in laying down the spiral line, arives at the space within which the "free radius" lies, she feels for the next radius, finds instead the thickened trap-line, seems to recognise it as different from an ordinary radius, turns right-about face and retraces her course a short space above her last track. The same process is gone through when she arrives once more at the "free radius" on the opposite side, the result being that the sector in which lies the "free radius" is left vacant, while the "spiral line" resolves itself into a series of concentric circles. But, now suppose that the trap-line lies at so wide an angle with the web that the spider fails to reach it with her fore-legs in her course; she then simply swings over the wider space and lays the "spiral line" just as an ordinary *Epeira* would.

In beginning to lay the "spiral line," as she does, from the centre, of course the trap-line will be for the first few rounds within easy reach—hence it happens, that in many webs, only a small unmeshed aperture is left near the centre, at the apex of the wide and usually vacant sector.

This is not mere hypothesis trumped up to account for the variation, but there are now before me on the buildings in Carlisle numerous examples of the webs of *Zilla x-notata*, Clk., presenting every variety of meshed and unmeshed sector. Some quite vacant, others half filled up, while others are completely filled in—but in each case the nearness or remoteness of the "free radius" to the plane of the web is significant. I am convinced—for I have observed all kinds of *Zilla*-webs under process of construction—that the angle which the trap-line makes with the plane of the web is the determining factor in this phenomenon.

Dr. McCook, an accurate observer, in Vol. I. of his "American Spiders and their Spinning work," p. 138, says, "In the number of these (webs) made by adults (August), the proportion of full round orbs was much greater than sectoral orbs. I am not able to account for this remarkable difference, as nothing in the site gave a clue."

Now I think I can show that my observations will furnish the desired clue to the difference in proportion—which I, too, have noticed, and can thus confirm Dr. McCook's report on that point.

The older the spiders get the larger the webs become, as a rule; the larger the web, the wider the space needed to stretch it in; the wider the space, the further must the web be from the (in my case) church wall and ivy leaves; the further the web, the greater will the angle of the trap-line be, and a very slight increase in the angle will admit of the spider passing beneath without touching the aforesaid line. Hence the older the spiders the greater will be the proportion of fully meshed webs.

It will be noticed that *Z. atrica* more frequently presents the vacant sector. I believe this is because, being hung amongst foliage, the space is more confined and therefore does not admit of so wide a play of trap-line.

If my readers can confirm these observations I hope they will do so, and, likewise, if they are able to deny them, let them do so in good set terms and the blackest of ink.

Tetragnatha, another very common spider, may be found lying with its elongate body stretched out beneath the central platform, or extended in close contact with a neighbouring leaf-stalk, its fore and hind legs stretched out to their fullest extent fore and aft, the balance of the body being preserved on either side by the tiny legs of the third pair.

It will be noticed that the central platform in the web of this species, and also of a closely allied genus, *Meta*, is not closely meshed as in *Epeira* and *Zilla*, but the centre is void of lines, thus forming a vacant oval space.

Linyphias of two or three species, *montana*, Clk., *dorsalis*, Wid., and *peltata*, Wid., lay their delicate silken tablecloths for the morning and evening meal in any convenient space, often beneath other webs, and in this way intercepting the winged creatures, hoping to escape by feigning death or falling downward as they strike the lines of other nets stretched out above.

These beautiful webs will be very familiar to my readers, as they hang dew bespangled in the early dawn, the maze of interlacing threads laden with midnight moisture, the owner lying beneath, back downwards, ready to rush and plunge its jaws into any poor creature luckless enough to fall upon it from the upper regions.

Here, too, we may see the two lovely little tent-makers—*Theridions*. *T. pictum*, Hahn., and *T. sisyphium*, Clk. (*nervosum*, Blk.), the former of a deep, rich, chocolate-brown colour, with red, toothed band, margined with white upon the abdomen, and with black annulated legs; the latter without the red band and exhibiting a greenish underside.

Both these little spiders dwell within their beautiful little tent-like abode, in size about that of a thimble, hung beneath an overhanging spray or leaf, its roof wrought of fine white silk, encrusted with the jeweled fragments of golden-green beetle wings, dried leaf chips, shining eyes, angular limbs, and many other unconsidered et ceteras once attached to former captives whose succulent frames have long since been squeezed and their juices tasted by the appreciative maxillæ of the builders.

Beneath the tent lies a perfect tangle of interwoven threads, whence an unfortunate may abandon all hope of escape should it be once fairly entangled. The spider, too, hurries down at once to complete the discomfiture of her unwilling visitor, shakes the web viciously, and finally closing with her victim, kicks out fine threads with the comb beneath the hind tarsi, to the intent she may entangle still more her struggling captive. Observers will be astonished to find how large an insect these small spiders will completely master and devour.

Often the male and female may be found peaceably dwelling beneath the same tent-house, where a little later will be found the dull buff cocoon of *pictum*, or the pale sea-green egg-sac of *sisyphium*.

The young spiders are soon hatched and live for some weeks in the old home with mama. Papa has by this time usually ceased to take any active interest in the commonplace details of mundane spider life, but hangs empty and chitinous, a mere ghost of his former agile little self, in some remote corner of the web. Hither at times a venturesome spiderling will wend its inquisitive way and proceed to investigate with palpal wonderment the dried remains of dear papa; and if perchance their may yet lurk a morsel of appreciable moisture within his ancient skin, this will lead to smacking of lips and general expression of maxillary satisfaction. Also too! no sooner has the family began to take care of itself, than mama begins to show unmistakable signs of a break up of her constitution; and she too evaporates into the future, thus bearing witness to the general fact that parent organisms have a knack of fading away when their offspring have been once fairly set upon their legs in life.

Yet another very interesting little spider stretches her delicate lace-work net over the leaves of my prolific hedge-row; or more frequently and in greater abundance upon the palisading of an adjacent garden. These tiny little creatures *Dictyna uncinata* by name, lay a series of radiating lines, converging towards the tiny burrow or tunnel (there are often two such burrows), subsequently laying upon them a flocculent silk carded out by the comb of bristles present upon the penultimate joint of the fourth pair of legs. The little creatures steady the metatarsus of one hind limb with the assistance of the other leg, and in this position the silk is combed off the special pair of spinnerets by a series of very rapid kicking movements. This flocculent silk adds very much to the efficiency of the web in capturing prey. The little brown spiders may be seen popping into their burrows like minute rabbits, while their small, white, flattish, circular egg-cocoon (often two or more) may be observed spun up not far from the burrow.

With this little spider I must close my list; no less than eight spiders, all of more or less interest, can be observed in the month of July upon a hedge of scarcely two feet high and twenty yards long.

It is necessary to visit such localties either at dusk or in the very early morning if one wishes to see spider-life in full swing; indeed the materials for this paper and the sketches for Plate xii. were all made between 4 and 5 o'clock in the morning, mnch to the mystification of an early coachman who was wont to pass that way to work. He evidently could not comprehend what on earth a man in a top hat and long coat should be glaring into a holly hedge for, at four o'clock on a summer's morning. Now I must confess I very much dislike to have my humble efforts to be a naturalist bandied about in the mouth of ready mockers, and I invariably managed to wriggle off when he drew inconveniently nigh. He used to watch and wonder as he puffed his short black clay and little by little draw nearer and nearer, apparently bursting to ask what was up. Now I hate a point blank question—conscience will not allow me to prevaricate and the only escape is to flatly refuse to answer, in short to be rude. For a long time I always managed to forestall inconvenient questions by "fine weather! eh?" "good for the hay! eh?" and so on to horses and cows and turnips and other congenial topics. But one morning he seemed determined to have me—the look was in his eye—he meant business, and he nearly did have me. He suddenly blurted out, ere I had time to get a counter question in, very pointedly "'tis late for holly berries, sir! eh?" What was I to say?—"er—ah —yes"—(happy thought) "it *is* late for holly berries, yes! it is *distinctly* late for holly berries" (it was—being the end of June), "er, and, my word!"—looking at my watch—"'tis getting late for breakfast too—good morning," and I was gone before we came to any understanding on the subject—Never again! No! Never again!

THE PTEROPHORINA OF BRITAIN,

BY J. W. TUTT, F.E.S.

(Continued from p. 161).

LARVA—Of the larva of this common "plume" Mr. Porritt writes as follows:—"On the 13th of June last, Mr. W. H. B. Fletcher found, feeding on speedwell growing on a bank at Worthing, a good supply of larvæ of this species, which he at once kindly forwarded to me. It was, however, a late batch, for, at the time, Mr. Fletcher was breeding the moth freely from larvæ he had collected some weeks previously.

Length about five-eighths of an inch, and scarcely so stout as seems usual in the genus. Head small, and narrower than the second segment; it is polished, rather flat in front, but rounded on the sides. Body cylindrical, of fairly uniform width, but tapering a little at the extremities, segmental divisions well defined; the skin, with a soft and half-transparent appearance, is sparingly clothed with short hairs. There are two varieties, which are perhaps about equally numerous. In one of them the ground colour is a bright grass-green; in the other, it is equally bright yellow-green; in both forms the head is pale yellowish-brown, very prettily reticulated with intense black. The dark green, or in some of the yellow specimens dark brown, alimentary canal forms the dorsal stripe; sub-dorsal lines rather indistinct, greyish white; below there is a still more indistinct waved line of the same colour; there is, again, a similarly coloured faint line along the spiracular region; and the segmental divisions also are of this pale colour. In some specimens the hairs are grey; in others brown. Ventral surface uniformly of the same colour as the ground of the dorsal area; the legs reticulated, and the pro-legs tipped with black" ("Entomologist," Vol. XV., p. 44). A few months after (*l.c.* p. 148), Mr. South again described the larva without, however, mentioning its variation.

PUPA—Of the pupa of this species, Mr. Porritt writes:—"The pupa is attached by the tail only, is rather long, but slender. The head, which is the thickest part, is abruptly rounded, and has the snout very prominent; thorax and abdomen rounded above, rather flattened beneath, and attenuated strongly to the anal point; eye, leg, and wing-cases fairly prominent, the last prolonged a considerable distance over the abdominal segments. As in the larva, there are two varieties; in one form, the ground is bright green, and there is little of any other colour, the pale grey abdominal divisions, and two indistinct pale lines on the dorsal area, with several faint purplish spots behind the thorax and on the anal segment, being all that are noticeable. The other form has the ground a dingier green, and there is a distinct purple dorsal stripe, edged on each side with greyish; the abdominal divisions and the tip of the prolonged wing-cases also purple. The pupa is capable of considerable movement, and, on being disturbed, turns up sharply the thorax and higher abdominal segments, so as to bring them quite at right angles with the several posterior segments. The first imago emerged on June 29th, and was quickly followed by a good series, which varied in size very much, some specimens being quite small. Two species of parasites also emerged, one of them an Ichneumon with a long ovipositor, which Mr. Bridgman informs me seems new to science" ("Entomologist," Vol. XV., pp. 44-45). The pupa was also described by Mr. South (*l.c.* p. 148).

Habitat—The species appears to occur in almost all suitable localities where its food plant occurs. I have found it abundantly in the rides of woods and on chalk-hills, flitting about naturally in the afternoon sunshine, but becoming more active at dusk. It is not very conspicuous as it rests on a grass culm, until disturbed, when it is seen readily enough. It is recorded from England, Ireland and Scotland, and Staudinger and Wocke give "the whole of Europe (except the polar region) and Armenia" ("Catalog," p. 343.) Stainton in his "Manual," p. 442, gives a very long list of localities. It occurs in Dublin, Cork and other Irish localities; at Garelochhead and on Pitscurrie Moss in Aberdeenshire. I do not know a more northern locality than the latter in Britain. Mr. South writes:—"I have generally found the larva of this species on the plants of speedwell growing on sunny banks, old walls and such localities, and the perfect insect may be readily obtained by beating, or rather stirring, the herbage in these places" ("Entomologist," Vol. XV., p. 148).

Time of Appearance—Unlike its near congeners, this species is not only single-hooded, but remains on the wing a comparatively short time. July is its usual time but in early seasons, specimens are to be found in the latter part of June whilst in late seasons, as in 1888, I have found specimens throughout August, but these are exceptional, and dependent entirely on climatic conditions.

Oidæmatophorus, Wallengren (*Œdematophorus*, Wocke).

America is rich in its species of this genus, Europe exceedingly poor. The Palæarctic region only gives four species ("Entomologist's Monthly Magazine," Vol. XVIII, p. 121), Dr. Staudinger gives only two; while the Nearctic region boasts no less than 10 species. Not one is common to both areas, but Dr. Jordan says that the American *grisescens* is scarcely distinguishable from the *Rogenhoferi* of the Tyrol, while the American *occidentalis* is very closely allied to *lithodactyla*. This latter species is the only member of the genus occurring in Britain. This genus is thus characterised by Wallengren:—"Antennæ of both sexes ciliated, with the basal joint very much thickened. Forehead obtuse, with the scales not forming a cone. Palpi longer than the head, ascending, slender, somewhat rounded, the joint distinct, the last short, blunt. The tibiæ of all the legs thickened at the apex, and those of the second pair even thickened in the middle. The spines of the posterior tibiæ short, of the first pair unequal, of the second pair almost equal. The anterior wings cleft to the third part of their length, the segments somewhat slender, no posterior angle to the anterior segment, that of the posterior segment not well marked. Segments of the inferior wings slender, the middle segment dilated like a spoon, the fringe of the posterior segment, without black scales.

The anterior margin of the upper wings deflexed, the posterior margin toothless, with the whole of the lower segment both deflexed and turned in so as to form a channel in which the inferior wings lie when the insect is at rest. Veins of the anterior wings nine in number, all simple; the 1st from the base; the 2nd and 3rd from the posterior side, and the 4th from the posterior angle of the cell, and running into the posterior segment; the 5th from the anterior angle, and the 6th and 7th closely approximated, and the 8th all from the anterior side of the cell, these run into the anterior segment, the 9th rises alone from the base. The 1st, 6th, 7th, and 8th veins are very slender. The cell distinct, closed. The transverse veinlet very narrow, arched, with its convexity turned towards the base of the wing" ("Entomologist's Monthly Magazine," Vol. VI., p. 125).

(To be continued).

CALLIMORPHA HERA IN SOUTH DEVON,

G. C. BIGNELL, F.E.S.

I think any brother entomologist after reading what I have to say on the captures of *Callimorpha Hera* must of necessity admit that it has established itself in South Devon, about 120 specimens having been recorded, including those mentioned in this paper. The first capture in South Devon was by Mr. D'Orville on August 14th, 1871, at Alphington near Exeter, recorded in the "Entomologist," Vol. V., p. 44. I knew the gentleman very well and often visited his garden in which the *Hera* was caught, it adjoined a large nursery, where imported plants in great quantities were received from the continent and I therefore considered at the time that the capture was an accidental importation among moss, &c. used in the packing of bulbs, remembering that the larvæ would be then very small in the autumn or early spring at the time of importation. A figure with description, and record of previous captures was published in the following Vol., pp. 33-36 and 239. Other captures are recorded but as they do not relate to my subject I shall pass them over. Ten years after, notifications of captures are made almost annually, viz.: Vol. XIV., p. 227. Mr. Herbert states that he caught a specimen of *C. Hera* on the 19th August, 1881, in the Teignmouth Road, near Dawlish, vol. XVII., pp. 233 and 234. Mr. Brooks records its capture in Devonshire and says, "The exact locality I would rather not name," subsequent information proves without doubt it was not far from Dawlish, this was in August, 1882, and two of the moths were obtained; the following year he caught three, and in 1884, five, at "a distance of fully three miles from where the specimens of *C. Hera* were taken in the previous years." In the next Vol., p. 297, the same gentleman records the capture of two more (1885) and mentions "a gentleman from London staying at Dawlish has succeeded in taking two others," and at p. 317, Mr. Jäger mentions that he captured one and saw one. He "hunted the ground in company with a friend from London," but does not mention any capture made by his friend, it may be two as mentioned by Mr. Brooks. Vol. XIX., p. 250. Mr. Jäger records seven specimens from Starcross, Dawlish and Teignmouth, the first capture took place on the 19th August, which escaped while trying to box it out of his net (1886). Vol. XX., p. 230. Mr. Kane mentions the capture of one at Exeter, 15th August, 1887, and at page 274, Mr. Jäger favours us with a note of his captures, six, and two sent him after leaving Dawlish, Vol. XXI., p. 258. Mr. Auld records the capture of one at Dawlish, and at page 274, Mr. Cook, of three specimens (1888). In 1889 we have none recorded; 1890 is also passed over without a notice. In 1891, Major General Carden captured seventeen in five days at Teignmouth; the same year the vicar of a small parish within the *Hera* radius captured and had brought to him over thirty specimens, most of them in a most dilapidated condition, as many were caught by village lads and carried in their hands a mile or more to the parson, but perhaps after all they would not have been served so badly as one I saw this year which had been crammed into a small pill-box by a boy, the said box constructed only to carry six pills. This reminds me that a young gentleman, who is now a medical student, when a lad attending school made his first capture of *Hera* in the Starcross district, twelve or thirteen years ago, the exact date not recorded. A few observations for 1892, after the above may be of interest also. On the 8th August, Mr. Jäger made his first captures, namely, two specimens, and according to promise duly advised me of the same, unfortunately, I could not leave home just then, but I joined him on the 12th. That day we did not make any captures; on the 13th, Mr. Jäger captured two and I netted one, and saw two others, after beating the hedges, both sides of lanes up one and down another until we must have walked over ten miles. The following day the proceeding was repeated over new ground, and three specimens only were discovered, of which we caught one, this was very near Exeter. The next day we started again and this time without a single capture, but we saw a lad who had one in good condition safely resting in his killing bottle. The weather during the four days was very boisterous, with a strong inclination to rain, and little sun at very short intervals. The result of our labour was therefore so very inadequate that I returned home. Mr. Jäger remained in the locality for some days after, his total captures amounted to twelve of which only one could be called a good cabinet specimen. The Clergyman previously referred to has obtained several this year the exact number I do not know, a few coming to light. He has also two, bred from larvæ found by his gardener. A gentleman from London has also visited the locality and "taken a small series" in the vicinity of Dawlish. By the foregoing we have records of captures of *Hera* from Exeter to Teignmouth, at least 13 miles as the crow flies and over 15 by rail. We have it also recorded that two captures were made at Hazlewood, a small village on the river Avon: and I have, myself, reliable information of two specimens taken near Plymouth a few years since. In considering this question it should be remembered that during dull and damp weather, of which we generally get a preponderance at this time of the year, the moth is very sluggish and seldom flies unless disturbed. This I think is the reason that so few have been captured; on the other hand in bright and sunny weather *Hera* flies so strongly and uses its wings so freely that it might be mistaken for a wasted *Paphia*, as indeed I did at Exminster and I should have not know otherwise if it had not alighted, but it was off again before I could place my net over it. I think the above named captures extending over so many years will go to prove that *C. Hera* has established itself in South Devon, and that very many more captures would have been made had we during the past ten years had more genial weather.

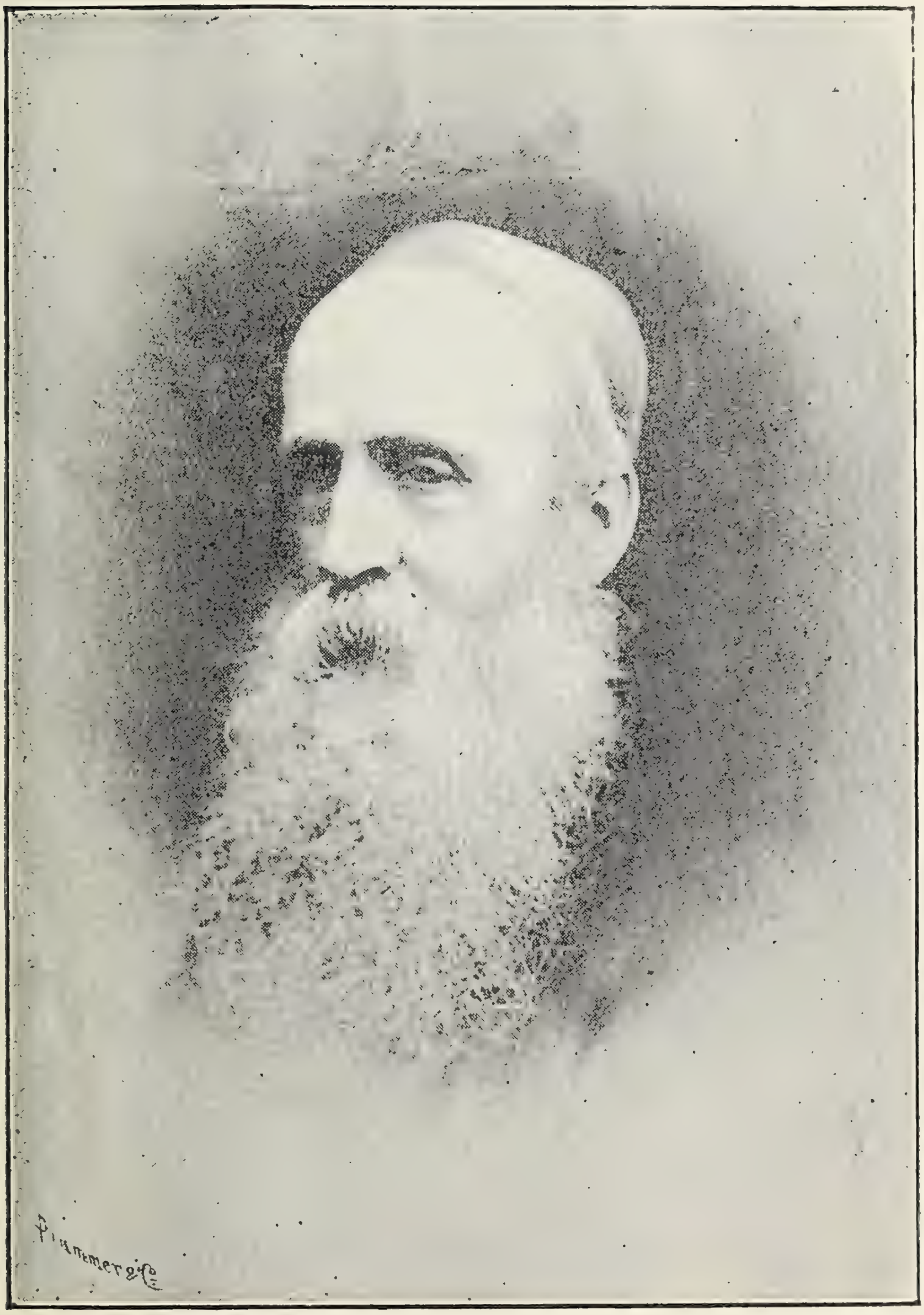
Stonehouse, Plymouth, 14th September, 1892.

NATURALISTS OF THE DAY.

IX.—REV. OCTAVIUS PICKARD-CAMBRIDGE.

M.A., F.R.S., ETC., ETC.

The gentleman whose portrait appears to-day was born on 3rd November, 1828, and is therefore 64 years of age. He commenced to collect Lepidoptera when he was only eight years, and has continued, with occasional interruptions at various periods, owing to professional and other engagements, to work at that order ever since. He has, however, in his own district, collected all orders of insects. In 1853 he began the study of the Arachnidæ (Spiders, etc.), and has worked at Exotic as well as British forms. His chief published works have been in connection with this branch of his studies, and include "Spiders of Palestine and Syria" P.Z.S., 1872; "Spiders of Egypt" P.Z.S., 1876; "Spiders of Dorset" in two volumes, illustrated, 1879-81, this work being in fact a complete work on British spiders to date. "British Phalangidæ or Harvestmen" 1889; "Yarkand Spiders" published by the Government of India, 1885. He has also communi-



REV. OCTAVIUS PICKARD-CAMBRIDGE.

M.A., F.R.S., ETC., ETC.

BRITISH MUSEUM NATURAL HISTORY.

cated numerous papers on Arachnidæ, and on Insects, to various Natural History Journals and proceedings of Societies. Ornithology has also had a large space of his attention, and he possessed at one time a fine collection of British Birds, and a good collection of eggs. Excepting four years at Durham, 1855-1858, two at Southport, in Lancashire, 1859-60, and two years abroad, 1864-65, in Egypt, Palestine, and the Continent of Europe, his residence has been at Bloxworth, in Dorsetshire, where he now lives. Mr. Picard-Cambridge's collection of Arachnidæ (true spiders) is very extensive, and contains perhaps a larger number of types than any in existence. His collection of known British species of *Aranaidea*, *Phalangidea*, and *Pseudo-Scorpions*, is nearly complete, many of the specimens being unique. His exotic collection is also rich in various other groups of Arachnids. Lepidopterists will remember him as introducing *Lycæna argiades* as a British butterfly, and also for his discovery of *Trichoptilus paludum*, which had been lost for many years.

Mollusca.—Notes.

NOTES ON LIMAX FILANS, Hoy.—This is described by Hoy in *Trans Linn. Soc.*, Vol. I., pp. 183-185. The diagnosis is "Limax (filans) cinereus margine flavo," and the author remarks that it seemed to be between *L. agrestis* and *L. flavus.*

In *Trans. Linn. Soc., Vol. 4, p. 85*, Latham describes and figures, from Col. Montagu's MSS, another spinning slug, from Penryn, Cornwall. This is not called *filans*, but correctly regarded as a variety of *L. Agrestis.*

There can be no doubt, I think, that Hoy's *L. filans* is a synonym of *L. marginatus (arborum)*, but singularly enough, Latham's slug has been going under Hoy's name of *filans* in nearly all the books,* through the perpetuation of some early mistake. Thus the principal synonymy stands as follows :—

Limax marginatus, Müller.

1774. *Limax Marginatus*, Müll., Verm. Hist., Vol. 2, p. 10.
1791. *Limax filans*, Hoy, Tr. Linn. Soc., p. 184.

Agriolimax agrestis, mut. *flaviclypeus*, (D. & M.)

1774. *Limax agrestis*, var. E., Müll., Verm. Hist., Vol. 2, p. 8.
1820. *L. filans=agrestis*, Leach, Syn. Moll. G. B., p. 74. [proofs only.]
1855. *L. agrestis*, var. 3, *L. filans*, Gray, Cat. Pulm. Brit. Mus., Part 1, p. 170.

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*Mr. Williams, in Sci. Gossip, 1887, p, 244, remarks that *L. filans* is most probably identical with *L. marginatus*, but he includes Latham's slug under this name as well as Hoy's, and in the column immediately before refers to Hoy's spinning slug as *L. agrestis.*

1857. *L. Agrestis*, var. *flaviclypeus*, Dum. & Mort., Cat. Moll. Savoie, p. 10. (fide Less. & Poll.)
1882. *Agriolimax agrestis*, var. *filans*, Less & Poll., Mon. Limac. Ital., p. 49.
1882. *Limax filans*, Locard, Cat. Gen. Moll, France, p. 13.
1891. *Agriolimax agrestis*, var. *filans*, Roebuck, Proc. Roy. Phys. Soc., p. 448. (And of numerous other English writers.)—T. D. A. COCKERELL, Institute of Jamaica, Kingston, Jamaica, *September 4th, 1892.*

TWO UNPUBLISHED VARIETIES.—*Sphærium ovale* var. *translucens*, Wigglesworth : Much brighter than the type, shining and translucent, very pale slate inclining to yellow at the edge. The largest measured 15 mm ; a type example found with them 1 mm. more. Examples of the the var. and type have been sent me by Mr. R. Wigglesworth, who procured them from the canal at Clayton-le-Moors.

Unio pictorum var *major* : Very large, 4 to 5 ins. in breadth, heavy, strongly ridged in the line of growth. My largest example measures 5 ins. (127 mm.) and weighs just 1,000 grains (64.7 grammes.) Found in the lake at Ossington, near Newark, where they occurred in large numbers, forming the bulk of those exposed on the drawing off of the water for cleaning out purposes. I am aware that large examples of this species have been reported from time to time, but I believe this is the only instance known in which they have been found largely exceeding in number those of the ordinary size.—W. A. GAIN.

THE SECONDARY SEXUAL CHARACTERS OF THE BRITISH COLEOPTERA.

BY JOHN W. ELLIS, M.B. (VIC.), F.E.S.

(Continued from p. 212).

Of the secondary sexual characters of the Coleoptera those presented by the feet (tarsi) are perhaps of the greatest service to the systematist, since the variations in their structure have a greater tendency to run through genera and even families, than have any of the previously mentioned peculiarities of structure. The most common of the sexual variations is a widening of one or more joints in some, or all of the feet, a character always indicative of the male sex. Some species have only the basal joint of the front feet dilated in the male, such as all the species of *Notophilus* and *Noterus* ; most species of *Hypocyptus* ; (*Corticaria crenulata, denticulata, etc.*), *Trichius fasciatus*, some *Cryptocephali (minutus, pusillus, labiatus)*, and most species of *Haltica*. Many of the Phytophaga, such as both species of *Gastrophysa*, all *Prasocuris*, *Phratora vulgatissima*. *Phyllobrotica quadrimaculata*, *Adimonia capræa* and *sanguinea*, *Thyamis lurida* and *atricilla*. All these have the basal joint of all the tarsi widened in the male. The males of the following genera have the *first two* joints of the anterior tarsi dilated : *Panagæus*, all the *Bembidiidæ* (except *Tachys Focki* and *quadrisignatus* which have no dilated joints), *Patrobus*, *Trechus*, *Licinus*, *Pogonus*, at least two species of *Trichopteryx (brevipennis* and *Kirbyi*, which latter has also the basal joint of the posterior tarsi dilated). *Olibrus corticalis* and *liquidus* have the second joint of the male anterior tarsi dilated. *Laccobius* and *Berosus* have the second and third joints, but not the first, dilated. A great number of species have the three basal joints of the front feet widened, as examples may be mentioned : (Genera) *Cicindela*, *Loricera*, *Leistus*, *Nebria*, *Pterostichus*, *Amara*, *Calathus*, (except *piceus* in which the tarsi are simple in both sexes), *Liodes*, *Chrysomela* (most), *Timarcha*, *Lina* and *Heliopathes*. The Harpalidæ, and the genera *Carabus*, *Calosoma*, *Blethisa*, etc., have four joints of the anterior tarsi dilated in the male, while in the genera *Harpalus*, and *Anisodactylus*, and in *Helops pallidus* and *striatus*, the four basal joints of the intermediate, as well as the anterior feet are widened. In *Anisodactylus* these widened joints are furnished with a thick brush of hair beneath, and many species have these joints clothed with long or short hairs. The whole anterior tarsus is dilated in the males of most of the Hydradephaga (where also it is frequently the case that the middle tarsi are also widened, while in *Hydroporus flavipes*, *Agabus arcticus*, and *A. sturmii*, the posterior feet alone are dilated) ; in the species of *Sphæridium* (where the last joint is curiously bent longitudinally), *Conosoma*, *Tachyporus*, *Tachinus*, *Megacronus (M. inclinans* has also the basal joint of the intermediate feet dilated), most of the Staphylinidæ and Quediidæ, *Necrophorus* (with a thick brush of red or yellow hairs beneath), many species of *Choleva* (also the first joint of the intermediate feet in the sub-genus *Ptomaphagus)*, *Meligethes* (especially in *M. palmatus*, Er.), some *Cryptophagus*, *Clytus arcuatus*, *Gonioctena*, *Heliopathes*, etc., etc. *Aphodius tristis* has the posterior tarsi dilated, flattened and hairy in the male. *Gnorimus* has four joints of the male anterior tarsus thickly clothed with a brush of yellow hairs. The males of *Malachius ruficollis* and *pulicarius* have the second joint of the front feet produced obliquely at the apex, a character which has caused their separation as a distinct genus *(Axinotarsus.)* The fourth joint of the males of the genus *Stenolophus* is deeply bi-lobed, while the same joint in *Acupalpus* is deeply notched at the apex. The dilated joints of the anterior tarsi of the males of the Dytiscidæ—including *Acilius* and *Hydaticus*, form a circular disc which is studded with suckers—a familiar object with the microscopist. The male of the large water-beetle *Hydrous piceus* has the last joint of the front tarsus furnished with a large triangular plate, while in the allied *Hydrophilus caraboides* the last joint is itself dilated. In *Leptura scutellata* the posterior tarsi are longer in the male than in the female. There remains only to be mentioned the curious fact that in a few genera (of Clavicorn Beetles) there is a variation in the number of joints in the male and female. Thus in the Rhizophagina, and in *Lemophlœus*, *Pediacus*, *Antherophagus*, and *Cryptophagus*, the males have only four joints to the posterior tarsi, while the females have five; and in the family Mycetophagidæ while the females have four, the males have only three joints in the hind feet. A few remarks on sexual differences in the claws of the feet will conclude the reference to the appendages of the thorax In the males of *Hydroporus davisi*, *halensis*, &c., the front claws are longer than in the female. The males of *Agabus nitidus*, *affinis*, *arcticus*, and *bipustulatus* have the claws of the anterior feet toothed; the outer claw of the middle feet of *Ilybius obscurus* is toothed in the same sex; and *Ilybius guttiger* has the claws of the hind feet unequal in the male. The claws in both sexes of *Telephorus abdominalis* are toothed, but in the *female* this tooth is much longer and spine-like. The males of *Serica brunnea*, *Phyllopertha horticola* and *Anomola frischii* have the outer claw of the front feet much widened; while the same sex in *Osphya bipunctata* has the claws trifid at the apex. In *Hydrous caraboides* the anterior claws of the male are very abruptly curved, like a grappling iron, and I notice (what I have not seen referred to in any of the systematic works) that in addition to the dilated anterior tarsus in the male *Sphæridium* the last joint is curiously folded, and while one claw is straight and slender the other is much thickened and forms a blunt hook.

(To be continued).

Reports of Societies.

ENTOMOLOGICAL SOCIETY OF LONDON.

October 5th.—Henry John Elwes, Esq., F.L.S., Vice-President, in the chair. Mr. W. H. Yondale, F.R.M.S., of Cockermouth, was elected a Fellow. Mr. C. O Waterhouse exhibited a specimen of *Latridius nodifer* feeding on a fungus, *Trichosporium roseum*. The Rev. E. A. Eaton sent for exhibition the male specimen of *Elenchus tenuicornis*, Kirby, taken by him 22nd August last, at Stoney Stoke, near Shepton Montague, Somerset, and described by him in the "Entomologist's Monthly Magazine," Oct. 1892, pp. 250-253. Mr. McLachlan stated that another specimen of this species had been caught about the same date in Claygate Lane, near Surbiton, by Mr. Edward Saunders, who discovered that it was parasitic on a homopterous insect of the genus *Liburnia*, and had also described it in the Ent. Mo. Mag., pp. 249-250. Mr. J. M. Adye exhibited, for Mr. McRae, a large collection of *Colias edusa*, *C. edusa* var. *helice*, and *C. hyale*, all taken in the course of five day's collecting in the neighbourhood of Bournemouth and Christchurch, Hants. There were twenty-six specimens of *helice*, some of which were remarkable both in size and colour. He stated that Mr. McRae estimated the proportion of the variety *helice*, to the type of female as one in fifty. Mr. Adye also exhibited two specimens of *Deiopeia pulcellha*, recently taken near Christchurch. The Chairman, Mr. Hanbury, Mr. Jenner Weir, and Mr. Merrifield commented on the interesting nature of the exhibition, and on the recent extraordinary abundance of *C. edusa* and the var. *helice* which was probably not exceeded in 1877. Mr. Dallas Beeching exhibited four specimens of *Plusia moneta*, lately taken in the neighbourhood of Tunbridge Wells. Mr. Gervase F. Mathew sent for exhibition two specimens of *Plusia moneta*, and their cocoons, which were found at Frinsted, Kent, on the 3rd September last. It was stated that Mr. Mathew had found seven cocoons on the underside of the leaves of monkshood, but that the imagos had already emerged from five of them. Mr. Rye exhibited a specimen of *Zygæna filipendulæ* var. *chrysanthemi*, and two varieties of *Arctia villica*, taken at Lancing, Sussex ; also dwarf specimens of *Euchloë cardamines* from Wimbledon ; a variety of *Thecla rubi* from Bournemouth, and varieties of *Coccinella ocellata* and *C. oblongoguttata* from Oxshott Mr. A. H. Jones exhibited specimens of *Argynnis pales* var. *isis*, and var. *arsilache*, the females of which showed a tendency to melanism, recently taken at Campfer, in the Upper Engadine ; also melanic forms of *Erebia melampus*, and a specimen of *Erebia nerine*, taken at Bormio, at the foot of the Stelvio Pass. Mr. Elwes exhibited specimens of typical *Erebia melas*, taken by himself at Campiglio, in the Western Tyrol, on the 25th July last, at an elevation of 7000 feet ; also specimens of the same species from Hungary, Greece, and the Eastern and Central Pyrenees. He stated that the supposed absence of this species from the Alps, which had seemed to be such a curious fact in geographical distribution, had been first disproved by Mrs. Nicholl, who discovered it at Campiglio two years ago. He also exhibited fresh specimens of *Erebia nerine*, taken on very hot rocks at Riva, on the lake of Garda, at an elevation of about 500 feet ; also specimens of the same species, taken at the same time, at an elevation of about 5000 feet, in cold forest glades ; and remarked that the great difference of elevation and climate did not appear to have produced any appreciable variation in this species. Mr. Elwes also showed a pair of *Dasydia tenebraria* var. *wockearia*, Stgr., from Campiglio, which appeared to him to be sufficiently constant and distinct from the typical form to be treated as a species. Mr. G. T. Porritt exhibited two fine varieties of *Abraxas grossulariata*, bred by Mr. George Jackson during the past summer from York larvæ. Also, on behalf of Mr. T. Baxter, a curious Noctua taken on the sandhills at St. Anne's-on-Sea, on August 20th last, and concerning which a difference of opinion existed as to whether it was a melanic form of *Agrotis cursoria* or of *Caradrina cubicularis*. Also a small dark form of *Orgyia antiqua*, which had occurred in some numbers at Longridge, near Preston. Mr. A. Eland Shaw exhibited a specimen of *Mecostethus grossus*, Linn., taken lately at Irstead, in the Norfolk-broad district. He stated that this was the first recorded capture of this species in Britain since 1884. Mr. C. G. Barrett exhibited a specimen of *Syricthus alveus*, caught in Norfolk, about the year 1860, by the Rev. J. H. Marsh ; a beautiful variety of *Argynnis euphrosyne*, caught this year near Godalming ; and a series of varieties of *Ennomos angularia*, bred from a female taken at Nunhead. Mr. P. Crowley exhibited a specimen of *Zygæna filipendulæ* var. *chrysanthemi*, taken last August at Riddlesdown, near Croydon, by Mr. Murton Holmes. Lord Walsingham sent for exhibition several specimens of larvæ of *Sphinx pinastri* and *Aphomia sociella*, preserved by himself, which were intended for presentation to the Bristish Museum. The larvæ of *pinastri* had been sent to him by Lord Rendlesham, who obtained them from ova laid by a female which he had captured in Suffolk last August. Mr. de Nicéville communicated a paper entitled "On the Variation of some Indian Euplœas of the subgenus *Stictophlœa*" ; and Captain E. Y. Watson exhibited, on behalf of Mr. de Nicéville, the specimens referred to in this paper. Colonel Swinhoe, Mr. Hampson, Mr Poulton, and the Chairman took part in the discussion which ensued. Mr. W. Bateson read a paper entitled "On the Variation in the Colours of Cocoons and

Pupæ of Lepidoptera ; further Experiments." Mr. E. B. Poulton read a paper entitled " Further Experiments upon the Colour-relation between certain Lepidoptera and their surroundings." Miss Lilian J. Gould read a paper entitled " Experiments on the Colour-relation between certain Lepidopterous larvæ and their surroundings, together with Observations on Lepidopterous larvæ." A long discussion ensued, in which Mr. Jenner Weir, Dr. Sharp, Mr. Merrifield, Mr. Poulton, Mr. Tutt, and the Chairman took part.—H. Goss, *Hon. Secretary.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

September 22nd, 1892.—C, G. Barrett, Esq., F.E.S., President in the chair. Mr. R. Adkin exhibited *Oxyptilus distans* Zell., and *O. pilosellæ*, Zell., taken near Dover this summer, and also on behalf of Mrs. Hutchinson, of Leominster a small collection of *Micro lepidoptera* from Cornwall, including *Diasemia literata,* and a remarkably brightly marked small form of *Herbula cespitalis,* said to be exceedingly local. Mr. South a voriable series of *Grapholitha cinerana,* taken on the borders of Middlesex, between Northwood and Richmansworth. He stated the species was abundant on the trunks of two grey poplars *(Populas canescens)* at the end of July and beginning of August, also *G. nesella* and the varieties *paronana,* Don., *boeborana,* Fab., and *rhombifasciana,* Haw., and remarked that although some specimens of the latter species varied in the direction of *G. cinerana,* they could always be distinguished by the different shape of the outer edge of the basal patch. Two examples of *petrana,* Hb.=*aspidana,* Haw., a form which was generally considered to be a variety of *G. nisella,* were found with *G. cinerana.* As the basal patch agreed with that of *G. cinerana,* he was inclined to think that *petrana* was a form of *G. cinerana,* rather than of *G. nisella.* Mr. Fenn stated that both species of *Grapholitha* were abundant on poplar in Kent. Mr. Barrett observed that he had always understood that *G. nisella* was associated with sullow, and that its occurrence on poplar was new to him. Mr. Mc Arthur showed the life history of *Sesia scoliiformis,* Bork., from Rannock, also *Hepialus humuli* L., from the Shetlands with the var *hethlandiea,* Stgr., Mr. Frohawk and Mr. Carpenter exhibited *Vanessa atalanta,* L. Mr. Frohawk referred to the small white spot on the red band which was generally thought to indicate the female, but he showed females with and without the white spot, and one male which also had this and other female characters. Mr. Carpenter made some observations upon the abundance of the larva of *Vanessa atalanta* on Streatham Common, and remarked upon the variation in size, some were full fed whilst others were quite small. A discussion then ensued as to the double broodedness of this species, in which Messrs. Carpenter, Tutt, Fenn, Barrett, Carrington and Frohawk took part.—H. W. BARKER and A. SHORT, *Hon. Secs.*

October 13th, 1892.—The President in the chair. Mr. James, of Uphill, Folkestone was elected a member. Mr. Adye on behalf of Mr. W. MacRae exhibited large numbers of *Colias hyale,* L., *C. edusa,* Fb., and var *helica,* Hb., a part of the result of five days collecting in the neighbourhood of Bournemouth and Christchurch, and Mr. Adye read some notes as to the proportions in which *helice* and *hyale* occurred as compared with *edusa,* he also expressed an opinion that the explanation of *edusa* not occurring two years in succession was principally due to the ova, which he stated were always laid on the upper surface of clover blades, being destroyed by the grazing of sheep and cattle and the action of mowing machinery. A discussion followed, and the members taking part therein were of opinion that this explanation was entirely inadequate. Mr. Adye also exhibited living larva and pupæ of *C. edusa* and two specimens of *Deiopeia pulchella* L., from Christchurch. Mr. Henderson also showed a specimen of this species taken by him at Hayling Island. Mr. Dennis a variety of the underside of *Lycæna adonis.,* the ground colour being white, and only having the marginal spots represented. Mr. B. W. Alhin a series of *Epinephele ianira*, L., from Scilly, the females having the orange blotch on the fore wings, and the males the fascia in the hind wings very pronounced. Mr. Fenn *Lithosia muscerda*, from Sardinia, a beautifully banded example of *Acidalia aversata*, and a box of examples of *Vanessa uritica*, picked from between four or five hundred, and showing very slight variation. Mr. Tugwell a specimen of *Melanippe hastata*, with the usual central fascia reduced to a spot, varieties of *Colias edusa*, and a pale series of *Hypsipetes ruberata*, from Hartlepool. Mr. C. G. Barrett forms of *Polia chi*, from Sheffield, a dark variety of *Argynnis euphrosyne*, taken by Mr. Oswald Latter, at Godalming, and specimens of *Syrichthus alveus*, Hub., taken by the Rev. Mr. Marsh, in Norfolk. Mr. Oldham among others, ♂ of *Odenestris potatoria*, of the colour of the ♀; *Nonagria canna*, and pupa case. Mr. Frohawk a specimen of *Sesia sphegiformis*, and stem of Alder with pupa case projecting, and remarked that the day before the insect emerged the pupa broke through the bark and remained a short time in the sun, subsequently withdrew and did not emerge until the following day. Mr. R. Adkin a series of *Vanessa C-album*, consisting of specimens reared from larva received in June last and others of the same brood received as imagines from Mrs. Hutchinson, of Leominster, together with a series of the autumn brood, also a ♂ example of the spring brood, having the under side coloration of the autumn brood, but resembling the form of the earlier emergence on the upper side, and he read notes referring to the known differences in the colour of the under side, and pointing out a distinction in the markings on the upper side of the two broods. He also exhibited a series of *Dianthœcia conspersa* from the Scilly Isles, with examples from North Devon and the North of Ireland for comparison. It was pointed out that one of the specimens from Scilly closely resemble the supposed Irish *D. compta*. Mr. Tutt mentioned that the Botys exhibited at a previous meeting was *Botys fuscalis*, Schiff., and was not therefore a new species as had been suggested at the meeting and so reported.—H. W. Barker and A Short, *Hon. Secs.*

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

Thursday, October 6th.—Exhibits.—Mr. Goldthwaite, a series of *Aplecta advena* from Carshalton, and a lemon coloured male of *Colias edusa*. Mr. Bacot, bred specimens of *Liparis dispar*. He remarked that a few larva received from Winchester produced males with paler markings and dark borders to the hind wings, while the females are darker than the others he had bred. Mr. Boden, *Vanessa urticæ* with white markings instead of yellow, and *Colias edusa* var. *helice*. Mr. Bellamy, a very variable series of *Anchocelis lunosa* and *A. pistacina*, taken on lamps at Wood Green. Mr. Smith, a male of *Ennomos autumnaria* taken at Southsea this season, this being the third specimen he had obtained from that locality; also *Lobophora sexalista*, and a banded form of *Camptogromma bilineata*. Mr, Hill, a long series of *Ennomos angularia*, bred from a female taken in Epping Forest. He remarked that the males all showed a tendency to become suffused in the vicinity of the transverse lines, but the females were normal, possibly indicating that the male parent was a suffused specimen. The larva were fed on copper beech. Mr. Riches, *Notodonta ziczac*, *Heliothis marginata*, *Dianthœcia capsincola*, *etc.* Mr. Mera, *Deiopeia pulchella*, a variety of *Lycæna alexis*, and bred series of *Lithosia complana* and *L. complanula*, all from Snffolk. He stated that he had beaten the larva of *complanula* from trees, but those of *complana* were found on a brick wall. Mr. Prout, a variable series of *Agrotis saucia* from Sandown. Dr. Bucknell, pupæ of *Ephyra punctaria*. He remarked upon the curious butterfly-like mode of pupation of this genus, the pupæ being attached to a leaf by the tail and a silken belt. He also stated that although the majority of the spring brood turned green before pupation, the autumn brood usually retained their brown colour. Mr. Battley, *Apatura iris* (bred) *Chærocampa porcellus*, *Stauropus fagi*, *Diphthera orion*, and a specimen of *Thera variata* with the band reduced to a small blotch on the costal margin, all from the New Forest. Mr. Bayne, *Argynnis paphia* ♀ with a bleached spot on each wing, *A. selene* with the black markings much reduced, *Triphæna subsequa* and *Heliothis dipsacea*, also from the New Forest. Mr. Clark, a series of *Hoporina croceago*, bred from the ova Mr. Southey, *Xylophasia rurea* and var. *combusta* from North London. Mr. Milton, *Colias edusa* and *Leucophasia sinapis* from Cullompton ; also in *Coleoptera*, 16 specimens of *Necrophorus ruspator*, 16 *N. vespilo* and 4 *N. humator*, all taken under one dead rabbit, and specimens of *Dorcus paralellopipedus*, *Prionus corarius* and *Philonthus splendens*. Mr. Heasler, *Apion cruentatum* and *A. spencei* from Totteridge.

Thursday, 20*th October*, 1892.—Exhibits :—Mr. Battley, a variable series of *A. didyma* and *N. festiva*, all from the London District ; also on behalf of Mr. Nicholson, a series of *V. urticæ*. Part of these were bred from larva, taken at Leigh, Essex, and showed a remarkable tendency to var. *ichnusa* (*i.e.* without the two black spots in the centre of the fore wings), two specimens being absolutely without these spots, and the rest only having them slightly developed. The other specimens, bred from Clapton larva, were all brightly coloured and dark. Mr. Hill, *C. or* from Forres and Winchester, the latter being larger and more distinctly banded, also *C. ocularis* from Wicken and *M. fluctuata* from Orkney. Mr. Clark, a perfect albino of the house sparrow, shot at Bayleigh, Essex. He also recorded the occurrence of the Great Shrike on the Hackney Marshes.—A. U. BATTLEY and J. A. SIMS, *Hon. Secs.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.

October 10th.—The president (Mr. S. J. Capper, F.L.S., F.E.S.) in the chair. Mr. J. T. Moore, A.L.S., was elected an honorary member, and Mr J. H. Stott, of Newcastle, Staffr., an ordinary member of the society. Mr. S. L. Mosley, F.E.S., of Huddersfield, read a paper entitled "Vegetable galls and their makers." The author referred to the difficulty in breeding these insects, and spoke of the theory of the ancients, who, because they could not understand how a caterpillar could be inside a gall which had no opening believed that the egg must have been deposited in the seed of the plant. He remarked on the scarcity of literature on the subject, and described and exhibited specimens of many of the galls and their makers, including some species new to Britain. The president exhibited a rich variety of *Epione apiciaria* ; Mr. Newstead an interesting case of *Atoucus sacer* and Egyptian scarabs, which were beautifully carved with hieroglyphics ; Mr. Arkle, *Heliothis armigera* bred from imported tomatoes ; and Mr. Collins some nice forms of *Acronycta leporina* ; Mr. Gregson series of *Agrotis ashworthii*, *Polia nigrocincta*, and *Dianthæcia cæsia* bred and captured by himself this year ; Mr. Harker two bred specimens of *Hadena satura* from Aberdeen, Mr. Jones Lepidoptera, captured in Ireland, including some nice Irish forms, Dr. Ellis series of *Cassida sanguinolenta* and *Bembidium saxatile*, Mr. Newstead drew attention to a record of *Polyomatus bætica* captured at Heswell, Cheshire, by Master McFee in 1886-7, which had lately come under his notice.—F. H. PIERCE, *Hon. Sec.*, 143, Smithdown Lane, Liverpool.

Obituary.

HOWARD VAUGHAN, F.E.S , ETC.

We regret to announce the death of our old friend and correspondent, Howard Vaughan, who died on 18th October, and was buried at Ilford. We hope to give a portrait of our departed friend with the December number of the "British Naturalist," and a brief biography.

RANDOM NOTES ON BRITISH LEPIDOPTERA.

BY JOHN E. ROBSON.

Polyommatus Artaxerxes with Four White Spots.—Mr. Barrett has a paragraph in the "Entomologist's Monthly Magazine" for September (p. 245), in reference to this variety which appears to be new to him. The specimen in question, formerly in the collection of the late John Sang, was taken in this district. The white spots on the hind wings were more distinct than on any specimen I have taken here myself. It occasionally occurs however with a trace of white, sometimes only a single white scale. In Scotland this form is of much more frequent occurrence. I have one in my collection taken near Aberdeen last year, in which the white spots on the hind wing are well developed, and others from the same district showing it less distinctly. I also have it from Galashiels with the same peculiarity. Mr. Barrett also has it from the County of Fife. It is to be observed of this little butterfly, that as we get further north we find the tendency to substitute white scales for black, both at the discoidal spot on the upper side, and in the centre of the white spots beneath. *Corydon* sometimes has a bluish white spot in the upper side, but I never saw one without black centres to the spots below. Have any other *Lycæna* this tendency?

Syricthus Alveus Hb., in England.—Another British Butterfly. Mr. Barrett has discovered specimens of *Syricthus alveus* in the collection of the Rev. I. H. Marsh, of Cowston, Norfolk. Observing that the series over the name *Alveolus* were larger than any he had seen before, Mr. Barrett compared a pair of them which Mr. Marsh gave him, with European species of the genus, and was puzzled for a time whether they were *Serratulæ* or *Alveus*, deciding finally that they were *Alveus*; but as Mr. Barrett points out, the doubt was not to be wondered at, as Continental Entomologists are undecided whether *Serratutæ* is or is not, a variety of *Alveus*. The specimens were taken in a damp open valley, bordering a wood, in the captor's own district, but believing they were the common species, no special notice was taken of the occurence, but it is thought to have been in May or June, eighteen or twenty years ago. None have been observed since, but possibly they have scarcely been looked for. Fuller details will be found in the "Entomologist's Monthly Magazine" for September (p. 244).

Since the above was written, the specimens have been exhibited at a meeting of the Entomological Society, and it is there suggested that they were captured about the year 1860. It will be worth while for Entomologists to examine their series of *Alveolus*, and to submit any large or peculiarly marked specimens to one who collects European butterflies, as it is quite possible specimens of this species or even other species may be found mixed with, or in lieu of our common Grizzled Skipper. The genus is a very difficult one, and many of the species are very closely allied. Attention should be given to the number and size of the white spots, especially of the hind wing, and to the under sides. In these will be found the best marks of distinction.

POLYOMMATUS VIRGAUREA.—During the last few years we have had quite a number of Butterflies recorded as occuring in Britain, besides those generally recognised. *Anosia plexippus*, and *Lycæna bœtica* were but casual visitors, *Lycæna argiades* and *Syricthus alveus* have probably been residents discovered as they were dying out, *Hesperia lineola* has proved to be common enough where it occurs. No one doubts the correctness of records of the occurrence of these species, though few entomologists have seen any of them except the last. But while records of the day are accepted unhesitatingly, we look with grave doubt or positive disbelief on records made by the entomologists of a generation or two back. We keep on our lists *Lycæna dispar* and *Polyommatus acis* that we know are extinct, yet we refuse a place to *Lycæna virgaurea*, which is on all the old lists, and is a species that ought to occur in Britain, if we can judge by its range elsewhere. In June last, there appeared in the *Field*, a letter from Mr. E. L. Layard, of Budleigh Salterton, in which he mentioned, among other things, that he had captured some fifty-one years ago, both *Dispar* and *Virgaurea.* It will be well to quote the exact words. Mr. Layard says :—

"I went down to Yaxley Fen, near Huntingdon, and was fortunate enough to secure several fine examples of *Lycæna dispar* and the scarce copper *L. virgaurea.* . . The year 1841 was famous for Butterflies.

This statement caused no little sensation in entomological circles, because the existence of a reliable living witness that the species had occurred, was an important matter. A better authority than Mr. Layard it would be difficult to obtain. Perhaps his brother, Mr. Austin Henry Layard, late Ambassador to Turkey, is better known to the public through his explorations at Nineveh, but Mr. E. L. Layard has held important posts in connection with the government of outlying British possessions, and has resided in Canada, South Africa, Ceylon, and many other places, and has had great and varied experience in matters pertaining to Natural History. Anything he states, should therefore be received as thoroughly reliable, and no more doubt ought to be felt when he tell us that he took *Virgaurea*, at Yaxley Fen, than had he said he had taken *Lycæna argiades*, in Dorsetshire, or *Syricthus alveus*, in Norfolk. Yet Mr. Barrett would have us believe that Mr. Layard mistook the sexes of *Polyommatus dispar* for the two Coppers. For this I see no reason. *Virgaurea* appears on all the old lists, but its localities do not appear to have been made very public though indicated in general terms. In fact there seems to have been as much unwillingness then to disclose the exact places where rarities could be had, as obtains now.

Mr. Dale has very kindly supplied me with the full bibliography of *Virgaurea*, as a British insect, from which I extract the following, which will give my readers information enough to form their own opinion upon. *Phlœas* was first named by Linnæus, in the "Fauna Suevica (1746) In 1710 Ray described a British butterfly which is certainly that known as *Phlœas*, but Linnæus in the 10th edition of his "Systema Naturæ," refers to this discription, and calls the species *Virgaurea.* This error caused considerable confusion afterwards, as it led entomologists, whose sources of information were but limited, to think that Ray's insect was the *Virgaurea* of Linnæus. Thus in 1778 Moses Harris figured and described our common, or Small Copper, under this name, *Virgaurea.* Lewin in 1795 figured the true *Virgaurea* and writes: "The natural history of this beautiful species is but little known. I have been informed that a collector used to take this fly and supply the different collections in London with it, but would not give the least account of its manners, or of the place where he found it. In the month of August I once saw two of these flies settled on a bush in the marshes. They were exceedingly shy and would not suffer me to approach them." Donovan in 1796 writes "A specimen of this very superb and rare butterfly has been taken at Cambridge. It has always had a place in the cabinets of English collectors of consequence, but we cannot learn by whom it first discovered in this country." Haworth in 1803 writes "Habitat Image Aug. Paludibus rarissime apud nos." Kirby and Spence write in 1826 "In the Isle of Ely has been taken *Lycæna Virgaurea* " Curtis in his British Entomology writes "It is said to have occurred in the fens of Cambridgeshire, in the Isle of Ely, and near Huntingdon." Stephens writes "The proper locality of this splendid insect does not appear to be well known. It is said to inhabit the marshes in the Isle of Ely and Huntingdonshire." Westwood and Humphrey recite most of the preceeding information, and Westwood also adds "I possess a specimen given me by the late Mr. Haworth as an undoubted native specimen." In a catalogue of the Duchess of Portland's effects on May 27th, 1786, is "Lot 3171, fine series of very rare British Papiliones, viz., two pair of *Virgaurea*," &c. In many old collections, specimens of *Virgaurea* are known to exist, and numerous examples have been sold in London when such collections have been brought to the hammer. Objection has been taken that these specimens are never ticketed with their place of origin, and cannot therefore be authenticated. But I fail to see the force of the objection. No doubt most scientific collectors ticket their insects now, and I can understand objection being urged against the British nationality of a rarity that is unticketed to-day, but there are hundreds of collectors even now who do not trouble to do this. The older school very rarely did so, and the absence of such label on the pin of *Virgaurea* is no more evidence that it is not British, than would be the absence of a similar label on the pin of *Dispar*. But some specimens are thus anthenticated. Mr. C. W. Dale has three examples of *Virgaurea* that belonged to his father, the late J. C. Dale, and they are all ticketed. The first is marked "from Stephens," the second "Huntingdon, from Dr. Leach," and the third "Kirkman's Sale, 1847." Dr, Leach, I am informed had four specimens, one of which he gave Mr. Dale. Mr. C. W. Dale, who has greatly assisted me in this investigation, also informs me that a Mr. Denny is supposed to have taken *Virgaurea* at Upensee in the Isle of Ely. Mr. Denny collected principally for the Rev. W. Kirby. There is a fine specimen of this beautiful species in a collection formed by the late Mr. Robertson, of Liverpool. No insects have been added or taken away since the death of Mr. Robertson some 50 years ago, but the collection has been well cared for by its present possessor, who through the kind influence of Mr. Capper, allowed Mr. C. A. Briggs and myself to examine it in April last.

Now in considering the preceding items, we must remember that the entomologists of 50 or 100 years ago, had not a score of Natural History Magazines, in which to make records and observations as we have, and consequently information on important points was very much a matter of verbal communication or tradition; but we really have several positive records of the occurrence of this species, and more in which "it is said" to have occurred. But, "it is said" is as much as we could expect to be given in those cases where the writer was not the observer, and as very few wrote books, and there were no magazines, it is rather a surprise that we have so much information. Lewin (1795) "*was informed* that a collector used to take this fly," but *he also saw* two of them himself in the marshes. Donovan (1796) records a capture at Cambridge. Haworth (1803) says "Aug. Paludibus rarissime apud nos." Kirby and Spence (1826) writes: "In the Isle of Ely *has been taken*;" Curtis, "In the Fens of Cambridgeshire, in the Isle of Ely and near Huntingdon," which is repeated by Stephens and Westwood. So much for the old records. Then of actual specimens, Westwood has one given him by Mr. Haworth "as an undoubted native specimen." Surely that is enough if there were nothing more. The Duchess of Portland, we see, had four. Mr. C. W. Dale has three, one of which was given his father by Stephens, and the second bears both the locality and the name of captor. The third perhaps cannot be considered any more authentic than other examples found in old collections. Then the Rev. W. Kirby's collector, Mr. Denny, took it, it is supposed, at Upensee, in the Isle of Ely. Mr. Robertson's specimen at Liverpool adds but little to the evidence, but the accumulation of small facts often make an irresistible whole. Even without Mr. Layard's record, the evidence appears to be enough to satisfy any reasonable person. I have been in correspondence with him upon the subject and his remembrance of the circumstances are perfectly clear and distinct. No shadow of doubt appears in his mind. I have shown elsewhere (Young Nat. V. vi, p. 64), that less than half of the number of butterflies are accepted as British that ought to occur. On the one hand we are finding that species have occurred recently or occur yet, that have never till now been considered British; on the other we find that recognised species are extinct or are dying out. *Virgaurea* is certainly extinct now, but all the evidence shows that it was formerly a native of this country, and like *Dispar* and also like *Machaon*, it lingered longest in the fens and marshes of our land.

General Notes.

CHŒROCAMPA CELERIO at HALIFAX.—On Saturday, the 1st instant, a fine specimen of this rare Hawk Moth was taken at rest upon some scaffolding, raised in front of a shop, in the town of Halifax, by a joiner who was working upon it, and although brought to me in a match box, the damage is exceedingly trifling. I think you will consider the capture worth recording.—EDWARD HALLIDAY, Akroydon, Halifax, *October 6th, 1892.*

MICRO LARVÆ FOR THE MONTH.—The month of November with its keen easterly winds, and occasional raw cold fogs makes collecting at times far from pleasant, but our resolution to be doing must still continue, for during the next few weeks the collecting of those larvæ feeding in the leaves and stems ought now to be completed, as very few leaves remain on the trees and plants after this month, and the dry stems get broken off and scattered by the high winds. We have plenty to do now in taking the larvæ of various species of *Nepticulæ*, and now is the best time for many species of *Lithocolletidæ*, for the bladdery-loooking mines of the larvæ of *L. lantanella* in the leaves of the wayfaring tree *(Viburnum lantana)* are now very conspicuous, and by searching the margins of woods for the Bush Vetch (*Vicia sepium*) we shall very probably take the larva of *L. bremiella*, which generally mines the entire leaflet. In the leaves of honeysuckle, we may still find the larva of *L. emberizæpennella* and *L. trifasciella*. The oak leaves at this time are mined by the larva of *N. quinquella*, this is one of those species that is occasionally seen in the greatest profusion one year, and then from some unaccountable reason, disappearing almost entirely for several seasons, then again appearing in plenty. In the stems of the water plantain (*Alisma plantago*) which is found growing on the edges of pools in rough broken ground, the larva of *E. udana* is now to be seen by splitting open some of the stems, their whereabouts may be easily discovered by the small holes in the side of the stems In the stems of the wild parsnip the larva of *C. dilucidana*, and in those of the wild carrot the larva of *C. francillana*, may now be found busily at work, the stems of thistles, at this time, afford nourishment to the larva of *M. cribrella*, *E. pflugiana*, and *E. cirsiana*, and on the leaves the cases of the larva of *Col. therinella* will now be found securely fastened to the midrib, and other parts. In the seed heads of the Carline thistle (*Carlina vulgaris*), the larva of *Parasia carlinella* is now feeding, and in the seeds of Burdock those of *P. lapella*. The dry stems of *Echium vulgare* are being made still more brittle at this time by the numberless small larva of *D. ocnerostomella*, busily at work inside making their long galleries, and on the seed heads of the yarrow (*Achillea millefolium*) the brownish cases of the larva of *Col. argentula* may be easily seen if looked for, and on seeds of *Atriplex* those of *C. annulatella*. In the leaves of the oak saplings the larva of that little gem *L. lawtella* is eating away the parenchyma, causing the leaves to crumple up; while in those dwarf sallows the larva of *L. quinqueguttella* is still to be seen mining the entire leaf, and the leaves of the bramble is now being mined by the larva of *T. marginea*, the bleached appearance of the leaves being very noticeable, the leaves containing the larvæ are best kept in flower pots, covered with gauze, in the open air, just covered with a piece of glass to keep off wet, for they do not change to the pupa state till spring.—G. ELISHA, Shepherdess Walk, London, N.

EDUSA, &C., IN DUMFRIESHIRE.—I have just got home from 10 days in Dumfrieshire but have done no great amount of execution. The nights were too windy and cold for sugar, or I might have done better. *Cardui* and *Atalanta* larvæ were very common, and I took one lovely *Edusa* and saw another but it proved too lively for me. I dug about 60 pupæ including 20 *Aprilina*, which are now emerging. These with larvæ of *Rumicis*, *Ligustra* and *Camelina* and a few odd moths were about all I obtained.—L. S. BRADY, Sunderland.

COLIAS EDUSA AT LIVERPOOL.—*C. edusa* was fairly plentiful at Altcar and Crosby sandhills, especially round the warren between the two places, during the last two weeks in August, including the var. *Helice*.

BOMBYX TRIFOLII has also been unusually plentiful on our sandhills this year.—C. G. GREGSON, Liverpool.

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EXCHANGE.

Duplicates.—Fine Blandina, Davus, Euphrosyne, Artemis (Scotch), Loniceræ, Mendica (Scotch), Capsincola, A. Ligustri, Villica, Orbona (vars.), Fasciuncula (var. Cana), Strigilis (var. Æthiops), Liturosa, Plecta.—T. Maddison, South Bailey, Durham

Duplicates.—Ægon, Blandina, Davus, Tiliæ, Loniceræ, Filipendulæ, Petasitis, Conigera, Tritici, Carpophaga, Polyodon (black vars.) Festiva—vars. Biundularia, Zonaria, Silaceata, Ulmata, Basilinea, Umbrosa, Gothica, Rubricosa, Gracilis, Albicolon, Rurea, and vars. Testacea (dark and light), Micacea, V. aureum, &c., &c. Desiderata, very many common species to enlarge series.—John E. Robson, Hartlepool.

Exchange (Duplicates)—Velleda, Mundana, Fulva, Nictitans, Lithoxylea, Rurea, Graminis, Oculea, Fasciuncula, Literosa, Furuncula, Arcuosa, Macilenta, Rufina, Chi, Protea, Candidata, Aversata, Vulgata, Olivata, Rubiginata, Ocellata, Badiata, Immanata, Fulvata, Lutealis, Prunalis, Decrepitalis (2 or 3, fair), Cembræ, Dubitalis, Murana, Octomaculana, Bertrami, Trigonodactylus, Caudana, Subjectana, Rubiella, Albulata, Menthastri, Basilinea, Bisetata, and Aprilina.—A. Adie Dalglish, 21, Princess Street, Pollockshiels, Glasgow.

Duplicates.—Suspecta, Thalassina, Plecta, Pisi, Pudorina, Sparsata, Loniceræ, Basilinea; Rurea and vars, Brunnea, Gemina, Augur, Strigilis, Segetum, Trapezina, Oleracea, Xanthographa, Comes, Senex (few), Ulmata, Festiva, and Blomeri. Desiderata—Numerous, and Birds' Eggs.—E. G. Potter, 19, Price Street, York.

Birds' Eggs for Exchange.—Great Plovers, Razorbills, Guillemots, Jackdaws, Magpies (variable series or clutches), Sand Martins, Com Terns, Puffins, Blackcaps, Partridges, Lapwings, Moor Hens, and one Golden Plover.—Wanted Cuckoo's eggs with clutches, and many other species.—E. G. Potter, 19, Price Street, York.

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Wanted.—Collectors to look through their duplicates for old, chipped, crippled, deformed, damaged and utterly useless Male Lepidoptera with bodies; will pay postage or endeavour to make a return,—F. N. Pierce, 143 Smithdown Lane, Liverpool.

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MEETINGS OF SOCIETIES.

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY The London Institution, Finsbury Circus, E.C. Meetings: First and third *Thursdays*, in the month. Fixtures:—November 3rd, "Antennæ, wings and colour as secondary sexual characters of Lepidoptera" by Mr. J. W. Tutt. Nov. 17th, "Random notes on the Hybernidæ" by Mr. L. B. Prout. December 1st, Annual Business Meeting. President's Address. December 15th, Discussion and Exhibition, "The Colias Edusa of 1892," to be opened by Mr. A. U. Battley.

ENTOMOLOGICAL SOCIETY OF LONDON. Wednesday, 2nd November, 1892, at 7 p.m. Papers to be read:—(1) "Additions to the Longicornia of Mexico and Central America, with notes on some previous recorded species," by Charles J. Gahan, M.A., F.E.S.; (2) "Contributions to a knowledge of the Homopterous family Fulgoridæ," by W. L. Distant, F.E.S.; (3) "Further Observations upon Lepidoptera. 1888–1892," by Edward B. Poulton, M.A., F.R.S.; (4) "The Secretion of Potassium-Hydrate by *Dicranura vinula*, and the emergence of the imago from the Cocoon," by Oswald H. Latter, communicated by Frederic Merrifield, F.E.S.; (5) "A revision of the genus *Ypthima* principally founded on the form of the genitalia in the male sex," by Henry J. Elwes, F.L.S. and James Edwards, F.E.S.

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TO CORRESPONDENTS.

A Portrait of the late Howard Vaughan, F.E.S., will appear in the next part.

Although eight extra pages are given with this part, a great many important communications still stand over till next month.

Arrangements are now completed for continuing the Molluscan Section. W. A. Gain, Esq., of Tuxford, Newark, has kindly undertaken the Land and Fresh Water Mollusca, and Brocton Tomlin, Esq., of The Green, Llandaff, will attend to the Marine Section. Communications may be made to either of these gentlemen. All letters requiring a reply by post should contain stamp.

The Section for Coleoptera is conducted by G. A. Lewcock, Esq., 73, Oxford Road, Islington, to whom also direct communication may be made.

Mr. Lewcock also represents the Magazine in London, and will receive subscriptions, papers and notes for publication, &c., &c.

Subscriptions, exchanges, business correspondence, notes, papers for publication, and all other communications, to be addressed—John E. Robson, Hartlepool.

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THE SECONDARY SEXUAL CHARACTERS OF THE BRITISH COLEOPTERA.

BY JOHN W. ELLIS, M.B. (VIC.), F.E.S.

(Continued from p. 235).

ABDOMEN.—The extreme variety of sexual differences presented by the abdominal segments precludes anything like a systematic anatomical arrangement of these characters. Taking the peculiarities connected with the dorsal segments of the abdomen first, we notice that in *Gnorimus* the pygidium—that is the exposed last abdominal segment—is plain in the male, but bears two tubercles in the female, especially evident in *G. variabilis*. The male of *Bryaxis helferi* has a small tubercle bounded by a semi-circular fossa on the first segment. But it is in the smaller Brachelytra that we find the greatest number of sexual abdominal variations. Thus the male *Ceranota ruficornis* has a transverse raised plate on the second, tubercles on the third and fourth, and the sixth segment depressed with three elevations near the apical margin. *Homalota vicina* has a distinct tubercle on the second segment of the male, very indistinct in the female; *H. cuspidata* has two tubercles on the third, fourth, and fifth segments in the male; a group of the same genus containing *H. currax*, *languida*, *insecta*, &c., has a distinct tubercle on the sixth segment in the male; in *H. circellaris* the male has a tubercle on the sixth and two on the seventh segments; the same sex of *H. depressa* has one tubercle on the sixth segment and four on the seventh; *H. hepatica* has two raised lines converging behind, on the sixth, in the male; *Leptusa analis* has, in the male, a keel on the sixth and one on the seventh segment, while its ally, *L. fumida*, has a tubercle on the sixth and a keel on the seventh. The genus *Gyrophæna* offers an admirable illustration of the variety of sexual sculpture in allied species. *G. pulchella* has a horse-shoe-like elevation on the sixth dorsal segment; *G. affinis* has a tubercle at the apex of this segment; *H. poweri*, *gentilis*, *nana* and *minima* have this segment furnished with four short ridges; *lævipennis* with four tubercles; *fasciata* with six short ridges; while *lucidula* has the surface of this segment finely granulated. In all these species the same segment is perfectly smooth in the female. Many *Homolatæ* (*nitidula*, *vicina*, *pagana*, etc.), have the dorsal surface of the seventh segment of the male covered with fine granulations; in *graminicola* these are especially distinct, and scattered over the sixth as well as the seventh segment; and in *autumnalis*, both sixth and seventh have *oblong* granulations. *Homalota occulta* has the sides and apical margin of the last dorsal segment distinctly raised in the male. *Deinopsis erosa* has the sixth segment of the male truncate and the seventh slightly notched; while in the female the margin of the sixth is wavy and the seventh is deeply cleft. Many brachelytra have the seventh dorsal segment in the male notched, or emarginate, as in some of the genus *Aleochara*, some of which also have the margin of the notch furnished with minute teeth *(A. lanuginosa)*. *Lathrobium terminatum* has the seventh segment rounded in the male and somewhat pointed in the female. Several species of *Homalota (scapularis, subterranea, autumnalis, nigra,)* have the last dorsal segment of the male split into four teeth ; in the species of *Tachinus*, the last dorsal segment of the male is split into four lobes, and that of the female into three, in *flavipes*, *humeralis*, and *rufipes*, and into four, which differ, however, from those of the male in shape, etc., in the other species of the genus. Among the diversities of the underside of the abdomen we may notice the following, treating the groups systematically for convenience. Among the Geodephaga we find little of interest in the abdominal sculpture, but in the genus *Pterostichus* the males of several closely allied species can easily be differentiated by the condition of the last ventral segment, which is always smooth in the female. Thus while *P. madidus* has a transverse ridge and a depression behind it, *P. æthiops* (which has been considered only a mountain form of *madidus*) has a large tooth and a shallower depression. *P. niger* has a keel on the last abdominal segment beneath, while *P. vulgaris* is smooth in both sexes. *P. anthracinus* has a deep depression, *P. nigrita* a tubercle, while the male of *P. gracilis* is simple, like the females of all these species. Among the water beetles it is only necessary to note the presence in the males of *Agabus affinis* and *unguicularis* of a series of striæ on each side of the stridulatory file. *Limnebius truncatellus* has a blunt tubercle on the last ventral segment of the male, while *L. papposus* has, in the same sex, a tuft of hair at the extremity of the abdomen. A great many species of Brachelytra (many species of *Aleochara*, all the species of *Microglossa*, most of those of *Oxypoda*, *Chilopora*, *Calodera*, *Ilobates*, many species of *Homalota*, *Tachyusa*. etc.)—have the last ventral segment of the male narrowed into a blunt point and projecting beyond the last dorsal ; but in some species of *Homalota* (*imbecilla*, *vestita*, *tibialis*, etc.) the last ventral segment is rounded in the male and emarginate in the female. In the males of some species the prolonged ventral plate is strongly ciliate at the apex. In *Conosoma*, *Cilea*, *Tachyporus*, and *Tachinus*, the last ventral segment of the male is so deeply notched as to expose the (usually covered) eighth ; in the females of *Conosoma* and *Tachyporus* the last ventral segment is entire and ciliate, while in this sex in *Cilea* it is six-lobed. In the genus *Hypocyptus* the sixth ventral segment of the male tends to project over the deeply notched seventh ; while in the males of *Philonthus intermedius*, *laminatus*, and *scutatus*, the fifth ventral segment projects over and nearly covers the sixth.

In many of the Quediidæ, Staphylinidæ, and Pæderidæ (*Lathrobium*, *Pæderus*, *Stilicus*, etc.), and in *Oxyporus rufus*, the seventh ventral segment is more or less deeply notched in the male, while being rounded in the female. Many Quediidæ, and some Staphylini and Philonthi, have this emargination preceded by a smooth (triangular or oblong) space ; others, *Philonthus æneus* for example, have the borders of the excision membranous ; while in *P. cruentatus* the notch is nearly, and in *P. fimitarius* is sometimes completely filled up by membrane. Some species of *Lathrobium* (*elongatum*, *boreale*, etc) have, in the male, two tufts of dark pubescence on the seventh ventral segment, enclosing an impressed space. In the male of *Stilicus fragilis* the fifth ventral segment bears an oblong tubercle surrounded by cilia, and the sixth has a deep excavation with raised edges. In *Bledius fracticornis*, etc, the sixth ventral segment of the male is emarginate, but the notch is filled up with membrane ; and in the males of several species of *Oxytelus* the sixth segment is furnished with tubercles, which are red in *insecatus* and *laqueatus*, and pale in *sculpturatus*. *Acrognathus mandibularis* has a tubercle in the middle of the first abdominal segment. The genus *Stenus* presents a great variety of sexual characters, mainly consisting of notches in the margins of some and keels on others of the segments, but *S. providus* and *S. lustrator* present the peculiar feature of tufts of *curled* hairs on the ventral abdominal segments of the male, while *S. juno* and *S. speculator* have in the same sex, tufts of hair between the middle coxæ Among the Clavicornia, out of a great variety of modification of the abdominal segments, it will suffice to mention that the most frequent sexual alteration is an emargination or sinuation of the hind margin of the sixth ventral segment, as in the males of some *Scymnus*, *Coccinella*, *Euplectus*, etc. In this last genus other species have the ventral segments foveolate, while *E. nubigena* has the whole abdomen longitudinally sulcate beneath. The males of the genus *Meligethes* are often furnished with a tubercle or keel on the last segment (*ochropus*, *brunnicornis*, *ovatus*, etc), while *M. bidentatus* has two tubercles in the same position. The male *Claviger foveolatus* has the sixth ventral segment tuberculate at the apex. In *Dermestes vulpinus* and *frischii* the male has a tuft of brown bristles on the fourth ventral segment, while in the same sex of *murinus*, *lardarius*, and *undulatus*, the third and fourth segments are so tufted. The males of *Cetonia* have the first five segments of the abdomen longitudinally impressed in the middle ; *Agrilus angustulus* has the first ventral segment of the male with two tubercles. The genus *Malthodes* presents, in the males, a very complicated development of some of the ventral abdominal segments ; the penultimate segment is usually semicircularly or triangularly notched, the last segment is often much elongated, and may be nearly entire at the extremity *(fibulatus, dispar)*, or the tip may be notched *(flavoguttatus)*, forked *(atomus)*, or the segment may be cleft into two very slender filiments (*marginatus*, *mysticus*, etc.) Occasionally in the same genus some of the dorsal segments are also modified in the male, even to the extent of being furnished with hooks at the hinder edge of the antepenultimate one *(dispar* and *flavoguttatus)*. A great many of the group Longicornia have the fifth ventral segment of the male truncate, while the same segment is rounded or truncate in the female (*Aromia*, *Callidium variabilis*, *Rhagium*, *Pogonocherus*, etc), while in *Acanthocinus* this segment is notched in the male and prolonged in the female. In *Leptura virens* the fifth segment is notched in the male, while in the allied *L. fulva* the same segment is furnished with two teeth. The same segment undergoes various sexual modifications in some members of the genera *Donacia*, *Cryptocephalus*, and *Thyamis*. The females of *Cryptocephalus* according to Fowler, usually have a large fovea on the last ventral segment in which the egg is carried previous to its deposition on a plant. The males of some species of *Chrysomela* have the last ventral segment swollen *(sanguinolenta)* or convex (*graminis*, *didymata*, etc), while those of *menthastri* and *hæmoptera* have a small fovea in the same segment. The male *Phyllobrotica* has the third and fourth segments triangularly impressed, and the fifth very large and channelled in the middle. In *Thyamis* the fifth ventral segment of the male is usually furnished with an impressed line, a depression, or a smooth space, or even a tubercle. The males of *Blaps mortisaga* and *similis* have a tuft of yellow or red hair at the apex of the first ventral segment. *Nacerdes melanura* has the last segment of the male with a deep triangular notch. The males of some of the genus *Anaspis*, (*frontalis*, *forcipata*, *melanopa*, etc) have long slender processes attached to the underside of the third segment of the abdomen, varying somewhat in shape and in length in the different species. In some species there is, according to Crotch, a tendency to the formation of similar processes in connection with the succeeding segment. The male of *Scolytus ratzburghii* has a tooth at the front margin of the third and fourth segments, that of *S. multistriatus* has a large tooth on the second segment beneath ; *Ceuthorrhynchus sulcicollis* has the last segment but one furnished with two small tubercles in the male, and the last segment has a depression bounded behind by a ridge, while in the allied *C. alliariæ* the male has no tubercle on the penultimate, and the last has a hollow succeeded by a tubercle. The males of most of the *Centhorrhynchidei* have the last ventral abdominal segment impressed or foveate. *Otiorrhynchus tenebricosus* and *fuscipes* have the segment deeply scratched in the male, smooth or punctured only in the female.

The male *Cionus scrophulariæ* has a ridge of yellow hair on the last segment. The male *Miarus campanulæ* has the last ventral segment with two tubercles.

THE HYMENOPTERA-ACULEATA OF LANCASHIRE & CHESHIRE,

BY WILLOUGHBY GARDNER, F.R.G.S.

(Continued from p. 208).

PSITHYRUS.

Another genus of parasitical Bees; they resemble the members of the genus *Bombus*, upon which they are parasitic, living apparently in perfect harmony with them in their nests; they consist of two sexes, male and female only, no neuter. The various species are usually promiscuous in the selection of their hosts, but the following are frequently associated together, viz.:

P. rupestris	in nests of	*B. lapidarius.*
P. vestalis	,, ,,	*B. terrestris.*
P. quadricolor	,, ,,	*B. shrimshiranus.* *B. pratorum*, etc.
P. campestris	,, ,,	*B. hortorum.* *B. latriellellus.*

The species which have been taken in our district are:—

PSITHYRUS, Lep.

rupestris, Fab.—*Apathus*, Newm.—Only reported, so far, from West Kirby, J.T.G.; and Thurstaston, W.G.

vestalis, Fourc.—Southport, B.C.; Chat Moss, on catkins, J.R.H.; Delamere, Helsby, and Chester, R.N.; Chester, E.C.T.

barbutellus, Kirb., *nec* Sm.—*campestris*, Thoms.?—Near Manchester, J.R.H.; Rainhill, H.H.H.; Oxton, W.G.; Rock Ferry, J.T.G.

campestris, Panz.—*Rossiellus*, Kirb., Thoms.—Hough End Clough near Manchester, J.R.H.; Knowsley, near Liverpool, H.H.H.; abundant at Delamere and Chester, E.T.C., R.N. Two specimens taken at the Leadworks, Chester, are entirely black varieties, R.N.

quadricolor, Lep.—*Barbutellus*, Sm.—Two very dark specimens at Thorpe Villa, Chester, E.T.C.

APIS.

Apis, Linn.

mellifica, Linn.—The hive bee. The variety *ligustica* occurs near Manchester, J.R.H.

This completes our list of Hymenoptera-Aculeata from the counties of Lancashire and Cheshire, so far as observations have been recorded. It is, I trust, only a preliminary one, containing, as it does, but 164 of the 373 species described by Mr. Edward Saunders in his "Synopsis," as indigenous to the British Islands.

It will be noticed that the records at present are confined to very few and scattered localities ; there is little doubt therefore that the investigation of hitherto unexplored districts will afford material additions in the future.

In conclusion, it may not be uninteresting to compare the above results with the two orders of insects of which local faunas have previously been compiled by the Lancashire and Cheshire Entomological Society, viz:—Lepidoptera and Coleoptera, as follows :

	Species recorded from Lanc. and Ches.				
Hymenoptera-Aculeata,	164 ;	or 44 %	of total British	species	(373).
Lepidoptera,	1,355 ;	,, 65	,,	,,	(2,079).
Coleoptera,	990 ;	,, 30	,	,,	(3,227).

THE PTEROPHORINA OF BRITAIN,

BY J. W. TUTT, F.E.S.

(Continued from p. 229).

Oidæmatophorus lithodactyla, Tr.—This widely distributed and very distinct looking species seems fairly abundant wherever its food plant occurs.

SYNONYMY—*Lithodactyla*, Tr. IX., 2, 225; Ev. "Faun. Vol. Ural.", 607 ; Zell "Isis," 1841, 843, "Linn. Ent. Zeit.," VI., 377 ; H.S., 10, V., p. 378 ; Frey 414. *Septodactyla*, Tr. IX., 2, 246. *Lithoxylodactylus*, Dup. XI., 313, 3. *Tesseradactyla*, Haw. "Lep. Brit.", p. 477. *Similidactyla*, Dale "Mag. Hist.", VII., 263 ; Stphs. "Ill.", IV., 375 ; Stt. "Cat.", 31. There is a great deal of difficulty relating to the synonymy of this species, which appears to be the *tesseradactyla* of Haworth and the *similidactyla* of Dale. Of this I wrote :—"*Tesseradactyla* is given as British by Haworth, but the species known on the Continent by this name is not a British insect, the name being applied to a species closely allied to *gonodactyla*. The Linnæan description, "Systema Naturæ" (12th edition, p. 900) might mean anything. It is :- '*Alucita* alis patentibus fissis cinereo-nebulosis ; posticis fusis.' It is Haworth (quoting Fabricius' description) writes : —'Alis patentibus fissis cinereo-nebulosis, posticis fusco nebulosis,' which is (except the last two words) exactly the Linnæan description ; but Haworth adds :—'Habitat prope Londinium at rarissime.' If the Continental lepidopterists are right in their assignment of the correct species (a non-British one) to the Linnæan name *tesseradactyla*, it becomes clear that Haworth's *tesseradactyla* (a British one occurring near London) is not the Linnæan one. Haworth places the species between *punctidactyla* and *didactyla* (= *distans*, according to my determination), and the only British species which has occurred continuously near London, which is "ashy-grey" or clouded with "ashy-grey," is *lithodactyla*, a species which our early collectors must have known, and taking the few British species now known, that Haworth does not distinctly describe, I think it is impossible to apply the description to any other British species. Referring to the Continental *tesseradactyla* again, I dare say the Continental lepidopterists have a species, distinct from, but closely allied to *gonodactyla* ; but, I have some specimens of Continental *tesseradactyla*, which are entirely indistinguishable from some large *gonodactyla* I have bred. At any rate, I feel no doubt that the *tesseradactyla* of Haworth is the *lithodactyla* of our present lists. This makes no difference to our nomenclature as *tesseradactyla*, Linn., is prior, and therefore *tesseradactyla*, Haw, simply becomes synonymous with *lithodactyla*, Treitschke. There is still another point—Wocke makes *isodactyla*, Zell, synonymous with *similidactyla*, Dale. But Dale's description of *similidactyla* is a first-class one of *lithodactyla*, and has nothing in common with *isodactyla*, Zell. To make matters more mixed, Dr. Staudinger, in his trade list, has sometimes for sale *Æd. lithodactyla*, *Plat. similidactyla* and *Plat. isodactyla*, so that Dr. Staudinger's idea of these species is rather muddled, and it would be apparently very unsafe to place the slightest reliance in the correctness of his nomenclature of any of these more difficult species which he may obtain" ("Entomologist's Record," etc., Vol. I., pp. 91-92). Wocke in the "Catalog" has muddled the British references to this species most thoroughly. Mr. Meyrick, in his new arrangement, places the two synonymns *lithodactyla* and *similidactyla* in different genera. There is some excuse for Continental entomologists not being thoroughly conversant with our British literature and synonymy, but one hardly expects a British lepidopterist to show his ignorance of our fauna by copying the errors of Continental authors. Besides, I had before pointed out the error (in the "Entomologists Record," Vol. I., pp. 91-91,) in the extract previously quoted. This species has the anterior wings divided into two lobes, both of which are pointed and slightly hooked, they are of a pale grey coloration, more or less tinged with brownish scales, and sometimes having a slight purplish hue. The costa is shaded with darker as far as the centre, just beyond which is a longitudinal black costal spot ; from this spot a pale lunular mark runs transversely to the centre of the wing ; another lunular mark joins the former, and ends on the inner margin, the area just beyond this much paler; there is another black linear costal mark towards the tip, two dots at the end of the fissure, and a dark shade in the centre of the wing, running longitudinally from the base, and ending at the junction of the two lunular marks before mentioned. The hind wings are divided into three plumules, dark greyish brown in colour. Stainton's diagnosis is:—"11‴ 1″ 1‴. F.-w. whitish-grey, sometimes with a brownish tinge; a dark blotch posteriorly edged with whitish before the fissure, and dark blotch on the costa beyond it; the middle pair of tibiæ much thickened at the end and in the middle" ("Manual," II., p. 443).

Imago—The type is thus described by Treitschke:—"*Alucita*, alis anticis albido testaceis, atomis striisque longitudinalibus fuscis lunula apicis dilutiore, fimbriis fusco alboque variegatis" ("Die Schmet." etc., IX., p. 245). A figure of all the different stages and food-plant is given in the May (1882) number of the "Entomologist." The following is Dale's description of *similadactyla* which has been mistaken for another species:—"Cinereous ochre or grey, base of head and collar dark-brown, superior wings partially dotted with black, deeply cleft at the apex and falcate; the costa and inferior margin a little darker, terminating suddenly and forming at the cleft an oblique and darker line partially edged with white, cilia fuscous, inferior wings, trilobed but simple; legs white, anterior tibiæ, with the inside and apex fuscous, intermediate with a bunch of fuscous scales at the middle, and another at the apex, the posterior fuscous outside; the tips of the joints of the tarsi fuscous. It resembles in size and appearance the ♂ *megadactyla*, of Hübner; but the falcated apex to the lower lobe of the superior wings, will at once distinguish it, and the legs are spotted and very similar to those of *P. trigonodactylus*, Haw; but it does not belong to the same section. Taken by Mr. G. W. Chant, in the Isle of Wight." ("Magazine Nat. Hist.," Vol. VII., p. 263). There could be no better description of *lithodactyla* than this, and whatever the *similidactyla*, Dale, that Dr. Staudinger sells can be, I cannot imagine.

Variation—There is a very considerable amount of variation in the ground colour and dark markings in this species. On the sandhills at Deal, the specimens are very pale, and have a slightly ochreous tinge, with the markings frequently almost obsolete, whilst in the marshes they are generally very dark and well marked. In Chattenden, I find dark specimens, with a somewhat purplish tinge, generally well marked but frequently unicolorous. The variation in this species is well worthy of attention.

Pupa—Mr. South describes the pupa as follows:—"Upper part hairy like the larva, colour whitish, much streaked with dark olive-green laterally ; dorsal line whitish, finely bordered with dark grey ; wing-cases yellowish-green ; antennæ and legs showing up darker ; a pinkish tinge just above the wing-cases. July" ("Entomologist," Vol. XV., p. 104).

Larva—The larvæ of this species may be readily found in May and June on the leaves of *Inula dysenterica*, or as it is sometimes called *Conyza squarrosa*. The larva was first described by Mr. Gregson who writes :—"The larva feeds in May and June on the leaves of *Conyza squarrŏsa*, sometimes quite defoliating and thus destroying the plant ; it is somewhat onisciform, of a light whitish-green colour and hairy ; when full fed it is about six or seven lines in length, with a broad pinkish dorsal stripe ; the head is obtuse, and the anal segment narrow" ("Entomologist," Vol. III., p. 201). The larva was then described in detail by Mr. Porritt as follows :—"The larva from which I took down my notes was received, amongst some of those of *Ebulea crocealis* feeding on *Inula dysenterica*, from Mr. W. H Grigg, of Bristol, June 15th, 1875. It was full-grown, five-eights of an inch in length, and of average bulk in proportion. Head globular and polished, smaller than the second segment, into which it can be partially withdrawn. Body of nearly uniform width throughout, but tapering slightly towards the posterior extremity ; it was clothed rather thickly with short hairs. Ground colour bright yellowish-green, head pale-green, the mandibles brown ; throughout the entire length of the dorsal erea is a broad pink stripe, edged on each side with a narrower purplish one, which is again edged with a fine whitish line. Ventral surface uniformly pale green. The hairs on the dorsal area are dark-brown, those on the sides whitish" ("Entomologist's Monthly Magazine," Vol. XIII., p. 236). It was again described by Mr. South and figured on its food-plant ("Entomologist," XV., p. 104"). Stainton says of the larva :—"Larva on *Inula dysenterica* and *Conyza squarrosa* in June and July" ("Manual," II., p. 443) ; whilst Dr. Jordan writes :—"The only Swedish, and the only British species of this genus is *O. lithodactylus*. In Sweden, the larva feeds on *Inula salicifolia* ; in England, on the well-known *Inula conyza* (or as it is sometimes termed, *Conyza squarrosa* and *I. dysenterica*" ("Ent. Mo. Mag.," Vol. VI., p. 125).

Mollusca.—Notes.

(Continued from Page 214.)

Among other causes influencing variation in a greater or less degree, may be mentioned *Massing*, Mr. W. Jeffery mentions taking the var. *flavescens* of *Sph. corneum* in a small stream, under water moss, and other vegetation, "literally in masses, and may be taken up by the handful," not found in the mud, as is the typical shell. I have taken a few examples of this variety under dense masses of weeds where no mud existed, and I have very pale examples of the var. *pisidoides* which were literally shovelled out of the filters at Clumber Lake.

HEAPS OF STONES AND RUBBISH.– Mr. J. Whitwham, writes: "I found specimens of this variety" (*Hyalinia excavata* var. *vitrina*) "inhabiting exclusively heaps of stone, cinders, and other refuse. All specimens taken since that time have evinced an invariable partiality for a similar habitat."

The Rev. S. S. Pearce says, of *Vertigo edentula* var. *columella.* "A few specimens after a diligent search among the loose stones and rubble." "The typical form not taken with this variety." It seems possible that such environment may have a disturbing influence on some species, perhaps not in the same direction in all.

Dr. Jeffrey says, of varieties, "they are all off-shoots of species, and originate in some peculiarity of climate, situation, composition of soil, or water which they inhabit; the nature and supply of food, and various other conditions." He also says "varieties are of two kinds —permanent and local."

Mr. C. Ashford suggests the possibility of "continued peculiarity of surroundings producing a cumulative effect upon successive generations," and writing of a variety of *H. virgata* previously referred to, says, "these facts confirm the opinion that such peculiarities are hereditary."

Regarding white varieties I find the following notices. Dr. A. Brot records in 1877, the finding in Switzerland of white varieties of *H. lapicida*, of *H. pomatia*, and of *H. nemoralis* associated, and of *H. sylvatica* and its var. *Alpicola.*

Mr. W. Jeffery remarks, the abundance of *Ancylus fluviatilis* in a stream issuing from the chalk hills, all white. I have seen other accounts of this shell of a similar nature, but cannot now find the reference. The writer last quoted, in a letter accompanying examples of the white variety of *Planorbis corneus*, sent for exhibition at one of the meetings of the Conchological Society, remarks that he "got some specimens of *P. corneus* last year from near Arundle, of the ordinary horn colour, and bred the two small white ones from them. On revisiting the locality this year, I got the larger specimen, which I think, clearly establishes the fact of that variety being found there; and at the same time shows that is irregularly bred from the usual type."

Mr. C. P. Gloyne relates that he received over fifty specimens of *Clausilia tridens*, from Porto Rico, all alike as two peas. "This was accounted for, in my opinion, by the West Indies being an unfavourable climate for *Clausilia*, and the same causes which have prevented the genus extending itself there have kept the single species to its original form."

Writing on ferns, Mr. E. G. Lowe says: "In the wild state abnormal forms are found most commonly where, from various causes, ferns do not grow luxuriantly, *i.e.*, grow under difficulties. Where ferns flourish in a high degree, it is almost useless to hunt for abnormal forms." The above opinions seem greatly at variance. Probably it would not be far wrong to say that although "difficulties," that is, unusual surroundings, must certainly tend to promote variation, still the surroundings may be so peculiar as to be tolerated by one form only, which, of course, may or may not be the type.

Mr. G. W. Shrubsole records a curious modification of *Pl. corneus*, several of his examples having "the aperture widely trumpet-shaped," and this in his opinion, "has arisen on the part of the animal from a desire to cover over as much as possible of the ravages caused by erosion," and he adds "In this instance we are able to *assign* the varietal character to a physical cause."

A more striking case of variation is recorded by Mr. W. Doherty in an early number of the Conchological Society's "Journal." Writing from Cincinnati, he says: "The eastern part of the Union is the peculiar habitat of gastrodont or internally dentate species of *Zonites*, and in a gastrodont variety of *Zonites (Conolus) fulvus*, Drap., recently found at several points near Cincinnati, we have an example of a widely distributed species, spread over all the northern parts of Asia, Africa, and America, assimilating in one portion of its range to the forms prevalent there." The advantages of these dentate processes, Mr. Doherty believes to consist in obstructing the entrance of the shell against the intrusion of a grub "which lives in beds of leaves and preys on small snails—by entering the shell at its mouth and devouring the animal. "The denticles may have been evolved as a protection against foes of this description."

From the foregoing facts we may, I think, conclude not only that almost infinite variations occur in species, some of which become fixed, and eventually form new species, or survive, whilst the type becomes extinct, but that organisms possess possibilities of development which certain conditions of environment are able to bring into action as required.

In these notes I have endeavoured to bring together, with some attempt at arrangement, the various facts related and opinions expressed regarding the causes of variation by a large number of writers in articles scattered through several publications.—W. A. GAIN.

Unio pictorum var. *major*, Gain.—In the "British Naturalist" for November, Mr. Gain describes a var. *major* of *Unio pictorum*. I would point that the *U. ponderosus*, Spitzi in Rossni., Icon., XII., p. 31., T. 59, F. 767, (1844), has priority, for it is but a variety of *U. pictorum*, and is regarded as such by Droiiet, in his "Monag. des *Unio* de la France," (Mem. d. l. Soc. d' Agricult. d. Sci. &c., T. VIII., No. 41-42, Troyes, 1887).—WALLER E. COLLINGE, Mason College, Birmingham.

Mr. J. Sherriff Tye has written to the same effect.—W.A.G.

RISSOA MEMBRANACEA, Adams:—Synonyms: *R. labiosa*, Montg., *R. fragilis*, Mich., *Turbo costatus*, Pult., *R. pulla*,, Brown, and probably many others.—It belongs to the subgenus *Zippora*, Leach—a manuscript name of Leach's, published by Gray in 1847, with the well-known *R. auriscalpium* L., of the Mediterranean, as type, This name is a convenient artificial group for *Rissoas* with a particularly longated form and reflected lip—the latter characteristic as in the members of what is generally considered the typical group (*R. parva*, *violacea*, etc). The shells in § *Zippora* are usually ribbed lengthways, but each species seems to have occasional exponents with these ribs either very indistinct or quite obsolete. Compare the similar varieties in nearly all members of the typical group,, *e.g. R. parva v. interrupta*, *R. violacea v. ecostata*, *R. albella v. sarsii*, etc. The type of the group given by Tryon* is according to MM. Bucquoy and Dautzenberg † a species of *Acme*, and no *Rissoa* at all. So much for the group, of which the species in the heading is our sole British representative. It is a somewhat local species, though occurring on many parts of the coast, and is to be looked for at low water on various seaweeds, *Zostera*, etc. I have found in Guernsey that it seems to affect the spongy green weed called *Codium tomentosum*, in company with *R. parva*. Shells on this weed are always especially clean and fine. While speaking of this *Codium*, I may may mention that in Guernsey, at any rate, it seems to be the exclusive haunt of that lovely little green Nudibranch, *Elysia viridis Montg.*, which there occurs plentifully, mimicking the colour of the weed to a nicety, and not easy for an inexperienced eye to "spot." The size of *R. membranacea*, to begin with, will serve to distinguish it from any of its congeners. It is the largest British *Rissoa*, averaging 8 mm. in length. There is also on the pillar a solid tooth, or fold, which is not found in our other species; the colour is whitish, with a tinge of yellow or brown, and at

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* Struct. and Syst. Conch. II, 263. † Moll. du Rouss. I., 276.

BRITISH MUSEUM
NATURAL HISTORY.

THE LATE HOWARD W. J. VAUGHAN,

F.E.S., ETC.

times a violet mouth. The spire runs to a sharp point rather suddenly, and the last whorl is very large and swollen out of all proportion to the size of the shell. The mouth, of course, corresponds, and is much expanded on the outer side, strengthened with a strong rib all round.

The shell is subject to considerable variation. Canon Norman catalogues vars. *fragilis*, Mich., *labiosa*, Montg., *discrepans*, Brown, *octona*, Nils., but I do not know their peculiarities. Jeffreys records three named varieties :—

1. var. *minor*, Jeff. "Smaller and smooth. Tenby and Dublin Bay." I have taken it Guernsey.
2. var. *venusta*, Ph. "Solid, shorter spire, stronger ribs : Poole." This on the continent is generally considered a distinct species. Possibly the Poole specimens were not the true *venusta*.
3. var. *elata*, Ph. "Thinner and longer, usually ribless." This is a brackish water form, according to Jeffreys, and occurs in estuaries, etc. It is very plentiful, especially dead shells, at Weymouth. I have taken it there of all sizes, but always perfectly smooth. This too is considered a good species abroad.—B. TOMLIN, Llandaff.

NATURALISTS OF THE DAY.

X.—THE LATE HOWARD W. J. VAUGHAN,

F.E S., ETC.

Howard Wright James Vaughan, of Woodford Green, Essex, on the skirts of the well-known Epping Forest, and No. 55, Lincoln's Inn Fields, London, was born at Hackney on the 18th April, 1846, and died after a very short illness (although he had been ailing for some time previously), upon the 18th October last, so that he was therefore only forty-six and a half years old, yet he was a connecting link between the older school of entomologists and the present, having been an entomological pupil of Dr. Henry Guard Knaggs, with whom he formerly much associated, and by whom he was introduced to the celebrated "At Homes" of the London leaders in the early 60's.

Mr. Vaughan has elsewhere stated* that the commencement of his entomological career was an impulse received through Miss Catlow's "Popular British Entomology," having been given him when a boy of twelve, where he recognised some of the insects depicted, and upon sallying out he found *dycæna argiolus* literally swarming, which he duly skewered with the pins known as "short whites," recommended by that lady as the most suitable for insects. He says, that from that time he collected as opportunities offered, but for about ten years with no regular system. This can scarcely have been the case however, for we have now lying before us his dairy of the year 1863, which is not only packed with entries of captures and exchanges, but which shows a systematically kept entomological cash account, with the items paid for insects, excursions, and even postage of individual letters and boxes, so that he must have devoted much time to the study even at that date.

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*Proc. Essex Naturalist, S.W., Vol. 3, No's. 7-9. July—Sept., 1889.

It was not long before his keen eye for detecting the minute differences between allied species, made itself felt, and he became associated with the staff of "Young England," writing for that periodical, the opening pages of what was intended to be an Illustrated History of our British Moths, the space, however, at his disposal was not sufficient for this to have proved a satisfactory work, and a change of proprietors led to it being discontinued. We believe the articles upon British Lepidoptera in the Annuals, signed by Dr. Knaggs, were also partly suggested by him, but otherwise, little entomological work proceeded from his pen, and the species introduced by him as new to our lists, have unfortunately failed to maintain their ground. It is, however, only fair to his memory to mention that he never himself believed that either *Hom. saxicola*, or *Eup. thuleana*, were true species, although described by him as such, upon the strenuous representations of others; whilst *Hom. senecionis*, of which he discovered the life history, had a prior continental name and *pryerella* is but an albino variety of *ceratoniæ*. These slight accidents of fate, perhaps served to deter him from venturing further upon nomenclature, but for years he advocated that the bone coloured *Cnephasia* of our salt marhes, was perfectly distinct from the species known as *perterana*; and that the *Catoptria*, from Sevenoaks, distributed by Mr. Machin, could not possibly be the same as that in our cabinets under the name of *modestana*, an opinion now known to be correct. He also first discovered the larva of *Tanagra chærophyllata*, and of several of our Noctuæ.

But it is chiefly as the pioneer in the now well worn path of *local forms*, that Mr. Vaughan will be long remembered. Whilst others thought of adding aberrations to their collections, he recognised the importance of long series in cabinets, the insects to be chosen from as diverse localities as possible, to enable a correct knowledge to be obtained from their study; both in this respect as well as the acquisition of specimens in the groups of the Phycidæ and Tortricina, he anticipated the modern collectors by a few years, and amassed more readily a valuable and extensive collection, which was only dispersed two years ago. An account of the sale and the unprecedented prices realised, appeared shortly afterwards in our columns.

A keen and enthusiastic collector, and liberal contributor to the wants of others, both personal and entomological, has been taken from us; to many known only by name no doubt, for the receipt of bad specimens led him to be non-desirous of correspondents. His profession, perhaps, was the cause of his manner being somewhat reticent, unless his judgment was appealed to, but then immediately his true nature showed itself, the apparent coldness was at once thrown off, and a genial friend made.

In the field he was was a lively companion,—anecdotal, untiring, and vivacious.

Reports of Societies.

ENTOMOLOGICAL SOCIETY OF LONDON.

November 2nd, 1892.—Frederick DuCane Godman, Esq., F.R.S., President, in the chair. Mr. S. Stevens exhibited, for Mr. J. Harrison, of Barnsley, and read notes on, a beautiful series of *Arctia lubricipeda* var. *radiata*, which had been bred by Mr. Harrison this year. Mr. G. T. Bethune-Baker exhibited specimens of *Polyommatus dispar* var. *rutilus*, taken in England by his father about sixty years ago. He stated that it was generally believed that this form of the species was confined to the Continent, but his specimens proved that it formerly occurred in England. Mr. C. G. Barrett exhibited dark varieties of *Acronycta leporina*, bred by Mr. J. Collins, of Warrington; also a white variety of *Triphæna pronuba*, taken at Swansea by Mr. W. Holland. Mr. M. Jacoby exhibited a specimen of *Sagra femorata*, from India, with differently sculptured elytra, one being rough and the other smooth. Mr. J. A. Clark exhibited a long series of remarkable varieties of *Liparis monacha*, bred from a pair taken at Scarborough. Several of the specimens were as light in colour as the typical form of the species; others were quite black; and others intermediate between these two extremes. The Rev. Seymour St. John exhibited a monstrosity of *Abraxas grossulariata*, and a specimen of *Tæniocampa stabilis*, with a distinct light band bordering the hind margin of the upper wings. He stated that he had bred both specimens. Mr. E. B. Poulton exhibited two series of imagos of *Gnopnos obscurata*, which had been subjected to dark and light surroundings respectively. The results were seen to be completely negative, the two series being equally light. Mr. F. Merrifield showed a number of pupæ of *Pieris napi*. About eight of them, which had attached themselves to the leaves of the cabbage plant on which they were fed, were of a uniform bright green colour, with light yellowish edgings; of the others, those which had attached themselves to the black net covering the pot, or the brownish twigs which supported it, nearly seventy in number, were dark coloured, with dark spots and lines. The remainder were of a green colour, much less vivid than in those which had spun up on the leaves, with numerous dark spots and lines on them. Mr. R. Adkin exhibited three bred female specimens of *Vanessa c-album*, two of which belonged to the first brood, and the third to the second brood. One of the specimens of the first brood was remarkable in having the under side of a very dark colour, identical with typical specimens of the second brood. He thought the peculiarity of of colouring in this specimen had been caused by a retarded emergence from the pupa, due to low temperature and absence of sunshine. Mr. F. W. Frohawk exhibited a series of striking varieties of *Satyrus hyperanthus*, bred from ova laid by a female taken in the New Forest in July last. Mr. F. D. Godman exhibited a specimen of *Amphonyx medon*, Cr., received from Jalapa, Mexico, having a pouch-like excresence at the apex of its body. Mr. McLachlan, Mr. H. J. Elwes, and Mr. Poulton commented on it. Mr. C. J. Gahan communicated a paper entitled "Additions to Longicornia of Mexico and Central America, with notes on some previously recorded species." Mr. W. L. Distant communicated a paper entitled "Contributions to a knowledge of the Homopterous family Fulgoridæ. Mr. Oswald Latter read a paper (which was illustrated by the Society's new oxy-hydrogen lantern) entitled "The Secretion of Potassium-Hydroxide by *Dicranura vinula*, and the emergence of the imago from the cocoon." The author stated that the imago produced, probably from the mouth, a solution of caustic potash for the purpose of softening the cocoon. The solution was obtained for analysis by causing the moths to perforate artificial cocoons made of filter-paper. Prof. Meldola said that the larva of *D. vinula* secretes strong formic acid, and Mr. Latter had now shown that the imago secretes potassium-hydroxide, a strong alkali. He said he had long been familiar with the fact that the secretion from the imago of *D. vinula* was alkaline to test-paper, but he had never investigated its composition ; and he also stated that the fact that any animal secreted a strong caustic alkali was a new one. Mr. Merrifield, Mr. Hanbury, Mr. Gahan, Mr. Poulton, and Prof. Meldola continued the discussion. Mr. H, J. Elwes and Mr. J. Edwards read a paper also illustrated by the oxy-hydrogen lantern, entitled "A revision of the genus *Ypthima*, principally founded on the form of the genitalia in the male sex." Mr. McLachlan said he had attached great importance to the genitalia as structural characters in determining species, and he believed that he could name almost any species of European Trichoptera simply from an examination of the detached abdomens of the males. Mr. Osbert Salvin said he had examined the genitalia of a large number of Hesperidæ, with the view of considering their value in distinguishing species, but at present he had not matured his observations. Mr. Jacoby, Mr. Bethune-Baker, Colonel Swinhoe, Mr. Lewis, Dr. Sharp, Mr. Hampson, and Mr. Champion continued the discussion. Mr. S. H. Scudder communicated a paper entitled " New light on the formation of the abdominal pouch in *Parnassius*.—Mr. Elwes said he had based his classification of the species of this genus largely on the structure of this abdominal pouch in the female. Mr. Jenner Weir remarked that a similar abdominal pouch was to be found in the genus *Acræa*; and Mr. Hampson referred to a male and female of *Parnassius* in Mr. Leech's collection, in which the pouch had come away from the female and was adhering to the male organs.—H. Goss & W. W. FOWLER, *Hon. Secretaries.*

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

November 3rd, 1892.—Exhibits.—Lepidoptera, Dr. Bucknell, a series of *Agrotis saucia*, from Freshwater, Isle of Wight, with London forms for comparison. Mr. Hollis, a series of *Lycæna bellargus* (*adonis*), taken at Ventnor, Isle of Wight. Mr. Battley, a fine series of *Lycæna argiolus* taken at Southend, two males approaching the colour of *bellargus (adonis)*. Mr. Bacot, a series of *Xanthia silago* bred from sallow catkins, from Epping Forest. Mr. Clark, two very fine varieties of *Arctia caja*, one being very pale, due to a failure of pigment, the other having a large splash of the coloration of the anterior wings on the left posterior wing. Mr. Prout, typical

Acronycta psi from the London district. Also *Eupithecia succenturiata* and *E. subfulvata*, from Sandown, Isle of Wight. Mr. A. Quail, a number of Australian *Heterocera*. Mr. Smith, a variety of *Argynnis aglaia* from Blandford, Dorset, having additional silver spots on the underside. Dr. Sequeira, series of *Hyria auroraria* and *Nonagria typhæ*. Mr. Bellamy, a number of species taken on lamps in the North of London, including *Ennomos angularia*, *E. tiliaria*, *Orthosia lota*, &c. Mr. Milton, *Sphinx convolvuli*, *Chœrocampa porcellus*, *Bombyx quercus* var. *callunæ*; and fine series of *Agriopis aprilina*, from Clevedon. Mr. Gates, a number of species taken near Hammersmith, including *Penthina salicella*, *Spilonota neglectana*, *Dicrorampha petiverella*, *Gelechia populella*, *Batrachedra prœangusta*, etc. Captain Blaydes-Thompson exhibited an example of *Chærocampa celerio* on behalf of Edward Halliday, Esq,, of Halifax, and a specimen of *Deilephila livornica* on behalf of Peter Inchbald, Esq., F.L.S., F.Z.S., of Hornsea, near Hull. An interesting discussion on the occasional appearance of certain *Sphingidæ* in Great Britain, then ensued. Coleoptera. Mr. Cripps, series of *Cicindela sylvatica* and *Illybins fenestratus*, from Aldershot. Mr. Heasler, series of *Homolota pagana* and *Monotoma rufa*, from Hendon.

Tuesday, November 15th, 1892.—Exhibits.—Mr. Prout, long series of *Hybernidæ* to illustrate local variation; also an abnormally large example of *Anisopteryx æscularia*, from Sandown, Isle of Wight. Mr. Battley, series of *Agrotis saucia* and *A. suffusa*, from Ilfracombe. He stated that he found the form of the former with the dark costa comparatively scarce. Mr. Bacot, series of various *Hybernidæ*, inclnding a fine series of suffused forms of *H. defoliaria* from Epping Forest. Mr. Quail, banded forms of *cucophearia*. Mr. Clark, a long and variable series of *Cidaria psittacata* from Lyndhurst. Mr, Nicholson, an example of *Noctua neglecta*, and a fine series of *Xylina petrificata* taken on sugar at Lyndhurst this autumn. Mr. Prout then read his paper "Random notes on the Hybernidæ."—A. U. BATTLEY and J. A. SIMES, *Hon. Secs.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

October 27th, 1892,—C. G. Barrett, Esq., F.E.S., President, in the chair. Mr. Hugh Main, of East Greenwich, was elected a member. Mr. Bristowe exhibited *Zygæna trifolii*, intermediate between the normal form and the yellow variety, and a variety of *Argynnis paphia*, in which the spots had coalesced and formed streaks. Mr. C. Fenn, *Tortrix rosana*, from Aberdeen and Eltham, and remarked that there was some doubt as to the Aberdeen specimens being referable to this species; Mr. Barrett said he considered them to be *T. rosana*. Mr. R. Adkin showed *Odonestis potatoria*, bred from larvæ collected in Sussex, the series showing considerable variation. He also called attention to the wings of some of the females being much scalloped, but still containing complete fringes. Some observations were made by members upon the probable causes of this. Mr. Barrett exhibited two specimens of *Nonagria concolor*, one taken in the Yaxley Fen district 30 or 40 years ago, and the other recently captured in a locality in the Midland Fen district and forwarded by Dr. F. D. Wheeler, and for comparison specimens of *N. helmanni*, *N. fulva*, *N. bondii*, and *Miana arcuosa*, showing the specimens in those species which approached closely to *N. concolor* in colour. Mr. Fenn, referring to the *Eupithecia* from Paisley, and which Mr. Tugwell at a previous meeting referred to as *E. castigata*, remarked that it had now been ascertained that the larva was a pine feeder, and therefore it could not be *E. castigata*. Mr. Tugwell said he understood that the specimens were found on pine trunks, but that the larva fed on heather, and that he had this year reared the species on heather. Mr. Carpenter said the specimen of *Argynnis paphia* recently exhibited by him was a female, and not a male as recorded.

November 10th, 1892—The President in the chair. Mr. R. South exhibibited portions of two broods of *Coremia ferrugata*, and of two broods of *C. unidentaria*, and read notes thereon, pointing out that the differences between the two forms of the first-named species, and the difference between them and the last-named species, and that he had been led to the conclusion that although it was correct to keep *unidentaria* specifically distinct from *ferrugata*, it might not be equally correct to place the two forms exhibited by him together as *ferrugata*, and he asked the members to endeavour to work out the life history of such varieties of this species as they might meet with. Mr. Goldthwait mentioned having recently reared imagines from a captured *unidentaria*, which all followed the female form. Mr. Fenn said he had always found both species breed very constant, and he had never bred intermediate forms. Mr. W. F. de V. Kane exhibited *Stauropus fagi*, taken in Ireland; a damaged specimen of *Notodonta bicolor*, taken at a new locality; a photograph of the pupa of *Dianthœcia barrettii*, and said he felt certain, from the structure of the pupa, that it belonged to the *Dianthœcia*. Among other things in Mr. Kane's box were some curious forms of *Fidonia atomaria*; *Bryophila glandifera*, varying to very black forms; light forms of *Boarmia cinctaria*; one *Cymatophora or*; melaric forms of *Xylophasia polyodon*; densely black forms of *Camptogramma bilineata*; peculiarly bronzed and black examples of *Hadena oleracea*; and dark *Agrotis lucernea*. Mr. Kane pointed out that these four species were captured in a damp and dark locality, and all showed a strong melanic tendency. Some interesting notes were contributed by Mr. Kane upon his exhibits, and a discussion followed. Mr. Purdey, of Folkestone, among others, the banded form of *Cidaria suffumata*; long series of *Cidaria russata*, reared from ova and including some beautiful varieties; a specimen of *Colias hyale*. taken at Folkestone in 1891; *Peronea comariana*, closely resembling *P. variegana*, Schiff; and a long series of *Eupithecia stevensata*. Mr. Purdey stated Mr. Webb had been unable to get the larvæ of this insect to feed on juniper, and Mr. Purdey said that it did not occur at the same time as *E. sobrinata*. Mr. Mera, varieties of *Lycœna icarus* and some very fine varieties of *Abraxas grossulariata*. Mr. Oldham, a very dark specimen of *Hadena oleracea*. Mr. Herbert Williams, living larvæ of *Colias hyale*, from a female captured in England, and stated that he had obtained one pupa, Mr. Billups, the dipteron, *Stratiomys potamida*, Mg., and its rare hymenopterous parasite *Smiera sispes*, Sp., both having been captured in the Plumstead Marshes.—H. W. Barker and A. Short, *Hon. Secs.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.

November 14th.—The President (Mr. S. J. Capper, F.L.S., F.E.S.), who occupied the chair, referred to the death of Mr. J. T. Moore, who was one of the original members of the society. Mr. John Watson, 177, Moss Lane, East Manchester, was elected a member of the society. Mr. W. R. Scowcroft, of Manchester, read a paper entitled, "Switzerland, a naturalist's paradise," in which he described a nine day's journey through Switzerland and gave an account of the Lepidopterous and Coleopterous insects seen and captured, one of the most interesting being pale dimorphic forms of female *Colias paleno*, similar to the var. *helice* of *Colias edusa*. In all 70 species of butterflies, 59 species of moths, and 40 species of Coleoptera were taken. The paper was illustrated by the specimens captured. The President exhibited a gynandromorphous specimens of *Halias prasinana*; Mr. Newstead *Vedalia cardinalis* which was imported into Alexandria in 1885 by professor Riley, of U.S.A., as a means of exterminating *Icerya egyptiaca*, a coccid injurious to orange trees, under the supervision of Admiral Bloomfield; also the specimen of *Polyommatus bœtica*, captured at Heswell by Master McFee, in 1886 or 1887. Mr. Gregson, *Sesia scoliæformis* and *Æcophora grandis* from North Wales. Mr. Harker, a pale variety of *Triphæna orbona*, with the transverse lines very strongly marked; Mr. Jones, autumnal lepidoptera; Mr. Prince, two varieties of *Bombyx rubi*, the wings of which were semidiaphinous and the middle lines distorted; Mr. Stott, a number of Coleoptera from the Swiss Alps; Mr. Newstead also exhibited a case containing the life history of *Anthonomus pomorum* the apple blossom weevil.—F. N. PIERCE, *Hon Sec.*, 143, Smithdown Lane, *Liverpool 16th*, 1892.

General Notes.

MICRO-LARVÆ FOR THE MONTH.—With the month of December, the season of root-collecting may be said to commence, and at every opportunity we should get away to some of the places marked down in our previous rambles during the past summer and autumn that are likely to produce good results, for it is as well to examine all the rough, uncultivated, and waste places, in as many districts as possible, for roots that contain larvæ, and if these localities should be many miles apart so much the better, for we are more likely to get some species in abundance that are perhaps scarce in others, to say nothing of the chance of turning up some very local or rare species. This mode of collecting is, I must admit, far from easy, and to be successful one must not mind an aching back or soiled hands, although the latter can in a measure be avoided by wearing soft gardening gloves, and in all our trips we must not forget a good strong hand bag and longish chisel, or digger, for some of the roots go deep, and require to be unearthed with as little damage as possible, and when out of the ground will be found rather heavy, but the whole of the earth must not be shaken from the roots, but cut away to the larger and thicker parts before being placed in the bag, and as this mode of collecting may be pursued during this, and the remaining two months it is unnecessary to overload ourselves. In the roots of ragwort *(Senecio jacobœ)* the whitish larvæ of *A. æneana*, is now feeding, more particularly in the smaller plants, and in those of larger growth, the larvæ of *E. atricapitana* and *E. trigeminana*, the latter will be seen mining down the outside of the root, and often working their way inside; the old roots of yarrow, on edges of pathways, or overhanging banks, should be examined for larvæ of *D. petiverana* and *plumbagana*, and in the roots of *Stachys arvensis* the larva of *O. antiquana* is now feeding, the Mugwort must not be forgotten, for the roots contain at this time the larvæ of *E. fæniana*, *D. simfiliciana*, and possibly *E. allisella*, and sandy places along the coast should be examined for the Salt wort *(Salsola kali)*, at the roots of which the pupæ of *G. canella* may now be found, and in roots of the sea holly *(Eringium maritimum)*, the larvæ of *A. maritimana* is still busily at work, and in those of wild carrot, near the surface of the ground, the larva of *A. zephyrana.* We must not forget, while in this locality, to examine the broken ground for roots of *Centaurea nigra*, as many of them contain larva of *X. zœgana*. We can also find plenty to occupy all our spare time in searching the woods for oak apples and galls, for we may breed from them *E. obscurana*, *C. splendidulana*, *C. argyrana*, *A. lunarella*, *H. fimbriana*, and many others, and the dry flower heads of the wild majoram growing on edges of woods, should be taken, for the larva of *G. subocellea* is among them in their curious Coleophara-like cases, many of the larva feeding in stems are still to be taken, and some of the *Coleophora* on the seed heads of several plants, so that plenty may be done even during the dull winter months.—G. ELISHA, Shepherdess Walk, City Road, N.

CAPTURES IN ARGYLESHIRE.—About the middle of June I paid a visit to a friend in Argyleshire, and was fortunate enough to take about two dozen *Scopula decrepitalis* in fair condition I discovered it last year and took a nice series then, about the beginning of June). We also took some fine specimens of *Selene*, *Falcula*, *Lacertula*, *Camelina*, *Batis*, *Rumicis*, *Rectilinea*, *Bidentata*, *Betularia*, *Pulveraria*, *Silaceata*, *Marginata*, and a host of common insects.—A. ADIE DALGLISH, Glasgow.

NOTES ON CAPTURES.—From the 15th to the 19th of August I captured 42 specimens of *C. edusa* in two thistle fields near Cullompton, Devon, about three-fourths of which were females, and one var. *Helice*; some were damaged, but most of them were in good condition; the *Helice* appeared to have just emerged, the females varied considerably. They were scarce at first but became more plentiful the last two days and a nephew of mine told me they were very common in these two fields the following week. They were easy to capture when flying from flower to flower feeding, but they were very wild when fairly on the wing. I watched them several times to see how long they could keep flying but in each case their wings tired my eyes. *Cardui*, 30; *Urticæ*, *Egeria*, *Megeria*, *Tithonus* were plentiful there, also one each of *Semele* and *Hyperanthus* and a few of *Aglaia*, but the last three very much worn and torn. On the outskirts of a wood there I took three of *Sinapis*. I did a little sugaring but only took two of *Maura* and one *Libatrix* but this was more than I could expect for although it was half a mile from those fields, yet I could smell the thistles quite strong. On the 19th I moved to the neighbourhood of Wellington, Somerset, where I remained till the 29th, when I returned to London, and though I was out and about every day yet I only saw three specimens of *Edusa* and not one of *Cardui* all the while, so it seems that they were not generally common in that locality. During the last week I could do but very little. I saw one of *Stellatarum* on some tarred board fence but very much the worse for wear, two others were seen by friends but not taken. *N. rubi* fairly common; *Libatrix*, one taken on the wing at dusk; *Maura*, fairly common at dusk; *Janthina*, one beaten out in the day time; *Plecta*, one; *Obscurata*, *Apiciaria*, *Adustata*, *Propugnata* one each; *Russata*, two; *Elutata* fairly common and still in good condition; *Plumbaria*, *Plagiata* common in places. In Coleoptera I was not able to do much. On arriving at Cullompton I was told that there was a dead horse near by and a lot of beetles at it, but by the time I could get there nothing of it was left but the dried skin and bones and a few dead larvæ of beetles. I went out in a field of oats which had been cut the previous day and the sheaves laid on the ground, they were then standing them up and under almost every sheaf there was one or more beetles belonging to the genus *Pterostichus*, chiefly *madidus*, *striola*, and *vulgaris*, and my nephews told me they were just as plentiful all over the field, so there must have been some thousands in that field alone. One of my nephews went to a hedge for shelter from the rain, and whilst standing under the bushes he looked up to see if there were any nuts there, when he saw a beetle I was very much wanting, a male of *Prionus coriarius*. Under a dead rabbit at Wellington, I took 17 specimens of *Necrophorus ruspator*; 14 of *vespillo* and 2 of *humator*. In Diptera, 2 of *Pedicea rivosa*, and 2 of *Echinomyia grossa* the last being the largest British species parasitic on larvæ. From Cullompton I have also taken the two next largest *E. ferose* and *Tachina fera* in the same locality. The beginning of July last I took a specimen of *Odontomyia ornata* at Stamford Hill settled on a currant bush. This species is not represented in our National Museum.—F. Milton, 134, Stamford Hill, London, N.

Coleoptera at Esher.—I paid two visits to this fine locality in June last, the results of which are appended. On June 14th, the weather was cold, with a strong wind blowing, and insects were not plentiful. I restricted my operations almost entirely to beatings. *Cyphon padi* and *Scymnus discoideus*, were common, and I was pleased to get a specimen each of *Megapenthes sanguinicollis*, and *Malthinus frontalis*. Sweeping produced *Cyphon padi* and *pallidulus*, and by grubbing among the pine needles and pine stumps I found *Oxypoda pallidula*, *Mycetoporus lucidus* and *Scaphidium 4—maculatum.* On June 24th, the weather was absolute perfection, not a breath of wind, and not a cloud ; so that insects, and especially Coleoptera, were swarming. I kept to the lanes round the district, and my operations were almost entirely confined to sweeping. *Cionus hortulanus*, *C. blattariæ*, *C. pulchellus*, *Cneorhinus exaratus*, *Ceuthorhynchus campestris* and *C. asperifoliarum* were common ; whilst single specimens of *Anapis thoracica*, *Liopus nebulosus*, *Apion cruentatum*, *Micropeplus porcatus*, and *Ceuthorhynchus cochleariæ* put in an appearance. I also took *Cis festivus* from fungi ; and whilst my brother was breaking off the bark from an old birch stump, he turned out *Melandrya caraboides.* When we got back to the station, my brother found a specimen of *Elater balteatus* among some pine shoots which he had brought away with him.—H. HEASLER, Peckham.

SPHINX CONVOLVULI IN THE ISLE OF MAN.—On the 8th November, I had brought to me a beautiful specimen of this insect, which was captured by Mr. C. Bacon, in his ground at Seafield, Santon, the latter end of September. It is in very good preservation, and measures almost five inches across the wings, from tip to tip. The taking of *S. convolvuli* in the island, is generally recorded every year, and as a rule the specimens which have been brought to me have been found close to the coast.—H. SHORTRIDGE CLARKE, 2, Osborne Terrace, Douglas, Isle of Man, *November 1 th, 1892.*

BEETLES.—I was fortunate enough to obtain ten fine specimens of rare *Cybalicus oblongiusculus*, a very rare beetle allied to *Harpalus*, in July last, on the South Coast.—REV. FRED O. PICKARD-CAMBRIDGE, Carlisle, *November 10th, 1892.*

COLEAS EDUSA IN WILTSHIRE.—After several years of absence this species has occurred in many parts of the country to the delight of all entomologists, Whilst on my holidays in August, I found it in abundance on the railway banks and waste places, at a small village called Lacock. I could have taken dozens, but I felt greater pleasure in watching them fly from flower to flower in company with *Rhamni*, *Io.*, *Atalanta*, *Cardui*, and the Common Blue, the latter occurred in hundreds. I also saw *Edusa*, at Thatcham, in Berkshire, and I have also heard of the capture of a single specimen near the town here, so I think it has occurred in most counties this season.—G. PULLEN, Derby.

AMONG various Coleoptera which I lately collected at Courton, County Wexford, I have a male *Philonthus ebeninus*, which shows some peculiarity in the thoracic punctuation. This is *asymmetrical* there being three punctures in the right series and four in the left. Rev. W. F. Johnson has noticed a similar arrangement in a specimen of *P. succicola* lately taken at Cultra, County Down. Could any reader of the "British Naturalist" who possesses a large series of Philonthi state whether they have found such aberrations from normal structure anyway frequent ? I have not noticed any others amongst my insects. —H. G. CUTHBERT, Blackrock, Dublin.

POLYOMMATUS VIRGAUREA.—I was much interested in your *resumé* on this subject, and I think you have proved your case without me. I feel very sad to think my collecting days are over, I have had so much success in that line. Who was the "Mr. Denny" alluded to in your paper, I am half inclined to think he his identical with Mr. Downey, of Cambridge, who identified my *Virgaurea* and *Dispar*, and others, which I took at Yaxley and Holme Fens.—E. L. LAYARD, Budleigh Salterton, *November 27th, 1892.*

C. XERAMPELINA.—I only took four specimens of *C. xerampelina* here this season, and they were all of the ordinary type. I have searched every year for the *var. unicolor*, but hitherto without success. Last year at the Nunnery, I found a very worn *xerampelina* at rest on an ash tree, which possibly is this variety, but its wings are too rubbed to be of any use. I have taken some very dark specimens of *T. gothica.* — H. SHORTRIDGE-CLARKE, Douglas, Isle of Man.

BREEDING OF THE QUAIL.—*Perdix Coturnex* in Derbyshire. My son has had sent him four eggs out of a nest of nine, taken this season on the Burton Sewage Farm, none of the workmen was able to identity bird or the eggs. I have compared them with those figured in Hewitson's, and have no doubt of the species. Not having seen any account of the species nesting in the Midlands I thought this may be of interest.—G. PULLEN, Derby.

S. BERTRAMI, ETC., IN AYRSHIRE.—I spent a few days at Mauchline, in Ayrshire, in July, when I came across *S. bertrami* in great numbers. *H. velleda* was also very common, and the var. *gallicus* could be freely taken. I also took *Gemina*, *Festucæ*, *V. aureum*, *Iota*, and *Fasciaria.*—A. ADIE DALGLISH, Glasgow.

COLEOPTERA NOTES.—*Donacia crassipes.*—On June 9th, I captured three specimens of beetle at Christchurch. – R. BECK, Southampton.

Clytus mysticus.—I have also taken this month (June), *Clytus mysticus* at Emery Down, Lyndhurst.—Id.

Oncomera femorata.—Mr. Ashby has recently taken this insect at the Undercliff, Seaton.—Id.

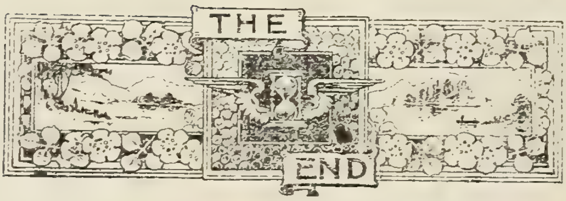
Malachius æneus.—I captured a couple of specimens of *M. æneus* at Broxbourne, on June 25th. Mr. Beck writes me that it has occurred this year in profusion, at Minstead, New Forest.—G. A. Lewcock.

Saperda populnea.—On June 18th, I captured a single specimen of this fine Longicorne at Claygate Covers. I found it sitting on a black poplar tree.—G. A. Lewcock.

Callidium violaceum.—I found an example of this beetle at Surbiton, on June 18th, on wooden fencing, close to the new recreation ground. Evidence of the ravages of the larvæ was plainly visible, but I had not time to examine their habitat property.—Id.

Oxyporus rufus.—Whilst searching a ditch, in a meadow at Fareham, on June 6th, I found a very small specimen of this pretty Staph.—Id.

Tanymecus sparganii.—Several specimens of this good beetle were among our captures at Christchurch in July. We obtained them mostly on the leaves of *Potamogeton*, as they came up during the sunshine. *D. crassipes* and *D. dentata* were also present, but the latter species was the commoner one.—G. A. Lewcock and H. Cripps.



5 DEC. 92
BRITISH MUSEUM NATURAL HISTORY

EXCHANGE.

Exchange (Duplicates)—E. minutata var. Knautiata Gregson, and many common species. Desiduata, numerous.—C. E. **Stott**, Manchester Road, Bolton-le-Moors.

Eychange (Duplicates)—Viretata, lobulata, E. edusa, solidaginis, suffusa testacea, loniceræ, citraria, pyramidea, cardui, selene, euphrosyne all on black pins. Desiderata, very numerous. —P. W. **Abbott**, Four Oaks, near Birmingham.

Duplicates—Fine Blandina, Davus (Scotch), Euphrosyne, V. urticæ (Scotch), Mendica, Fulginosa and borealis, Loniceræ, Capsincota, Myricæ, Menyanthidis, Adusta, Rectilinea, H. urticæ, Duplaris (dark), Rurea (vars.) Polyodon (dark), Plantaginis, Conflua, Plecta, Wavaria, Maculata, Atomaria, Pinetaria, Lobulata, Suffumata, Corylata (light), Testata, Populata (vars), Fumata, Atomalis, Hastiana, Ministrana, Cosmophorana, Ochracella.—T. **Maddison**, South Bailey, Durham.

Duplicates.—Ægon, Blandina, Davus, Tiliæ, Loniceræ, Filipendulæ, Petasitis, Conigera, Tritici, Carpophaga, Polyodon (black vars.) Festiva—vars. Biundularia, Zonaria, Silaceata, Ulmata, Basilinea, Umbrosa, Gothica, Rubricosa, Gracilis, Albicolon, Rurea, and vars. Testacea (dark and light), Micacea, V. aureum, &c., &c. Desiderata, very many common species to enlarge series.—**John E. Robson**, Hartlepool.

Exchange (Duplicates)—Velleda, Mundana, Fulva, Nictitans, Lithoxylea, Rurea, Graminis, Oculea, Fasciuncula, Literosa, Furuncula, Arcuosa, Macilenta, Rufina, Chi, Protea, Candidata, Aversata, Vulgata, Olivata, Rubiginata, Ocellata, Badiata, Immanata, Fulvata, Lutealis, Prunalis, Decrepitalis (2 or 3, fair), Cembræ, Dubitalis, Murana, Octomaculana, Bertrami, Trigonodactylus, Caudana, Subjectana, Rubiella Albulata, Menthastri, Basilinea, Bisetata, and Aprilina.—A. **Adie** Dalglish, 21, Princess Street, Pollockshiels, Glasgow.

Duplicates.—Suspecta, Thalassina, Plecta, Pisi, Pudorina, Sparsata, Loniceræ, Basilinea: Rurea and vars, Brunnea, Gemina, Augur, Strigilis, Segetum, Trapezina, Oleracea, Xanthographa, Comes, Senex (few), Ulmata, Festiva, and Blomeri. Desiderata—Numerous, and Birds' Eggs.—E. G. **Potter**, 19, Price Street, York.

Birds' Eggs for Exchange.—Great Plovers, Razorbills, Guillemots, Jackdaws, Magpies (variable series or clutches), Sand Martins, Com Terns, Puffins, Blackcaps, Partridges, Lapwings, Moor Hens, and one Golden Plover.—Wanted Cuckoo's eggs with clutches, and many other species.—E. G. **Potter**, 19, Price Street, York.

CHANGE OF ADDRESS.

W. E. **Collinge**, *from* St. Andrew's, N.B., *to* Mason College, Birmingham.

MEETINGS OF SOCIETIES.

CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY Meets on the First and Third *Tuesdays* in each month, at the London Institution, Finsbury Circus, E.C., from 7.30 to 9.30 p.m. The following programme has been arranged for the coming winter: December 6th—Annual General Meeting. President's Address, etc. December 20th—"The Colias edusa of 1892," by Mr. A. U. Battley. January 3rd.—Pocket Book exhibition. January 17th—"Stauropus fagi," by Mr. A. F. Bayne.—A. U. Battley and J. A. Simes, *Hon. Secs.*

ENTOMOLOGICAL SOCIETY OF LONDON, December the 7th, 1892, at 7 p.m. Papers to be read:—(1) "Further observations upon Lepidoptera" (Illustrated by the Oxy-hydrogen lantern), by Edward B. Poulton, M.A., F.R.S. (2) "The Effects of Temperature on the colouring of *Pieris napi*, *Vanessa atalanta*, *Chrysophanus phlæas*, and *Tephrosia punctulata*," by Frederic Merrifield, F.E.S. (3) "Notes on *Hydroptilidæ* belonging to the European Fauna, with descriptions of New Species," by Kenneth J. Morton: communicated by Robert McLachlan, F.R.S. (4) "On some neglected points in the Structure of the Pupa of Heterocerous Lepidoptera, and there probable value in classification; with some associated observations on larval prolegs," by Dr. Thomas Algernon Chapman, M.D., F.E.S. (5) "Description of a new species of Butterfly, of the genus *Calinaga*, from Siam," by James Cosmo Melvill, M.A., F.L.S.

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TO CORRESPONDENTS.

A Portrait of Professor Flower, K.C.B., will appear in the next part.

Although eight extra pages are given with this part, a great many important communications still stand over till next month.

Arrangements are now completed for continuing the Molluscan Section. W. A. Gain, Esq., of Tuxford, Newark, has kindly undertaken the Land and Fresh Water Mollusca, and Brocton Tomlin, Esq., of The Green, Llandaff, will attend to the Marine Section. Communications may be made to either of these gentlemen. All letters requiring a reply by post should contain stamp.

The Section for Coleoptera is conducted by G. A. Lewcock, Esq., 73, Oxford Road, Islington, to whom also direct communication may be made.

Mr. Lewcock also represents the Magazine in London, and will receive subscriptions, papers and notes for publication, &c., &c.

Subscriptions, exchanges, business correspondence, notes, papers for publication, and all other communications, to be addressed—JOHN E. ROBSON, HARTLEPOOL.

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